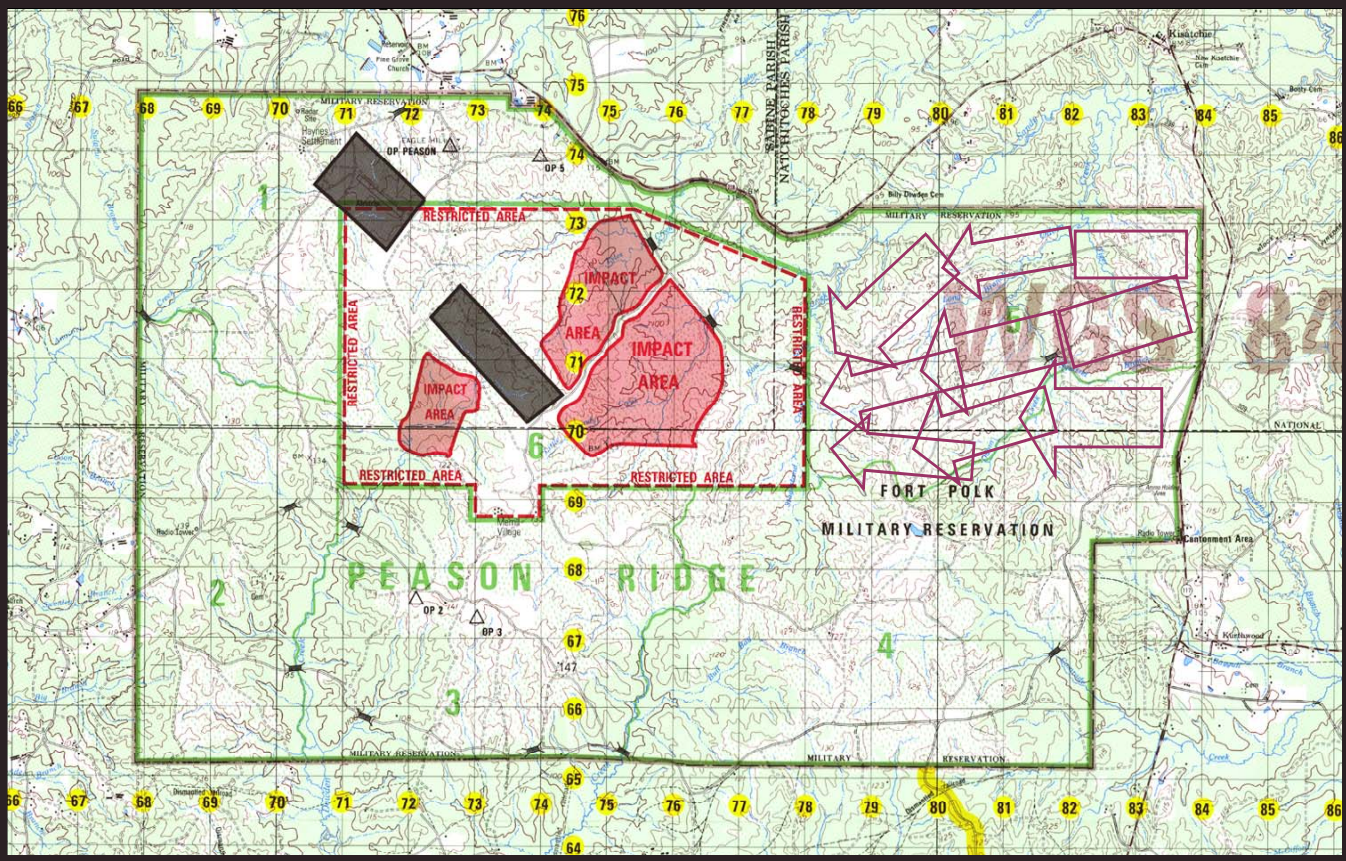
# Environmental Assessment
# For Construction and Operation of the Digital Multi-Purpose Battle Area Course (DMPBAC)

February 2003

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**Prepared for:**

**Joint Readiness Training Center and Fort Polk, Louisiana**
**And**
**US Army Corps of Engineers, Mobile District**

# FINAL

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Prepared for:
Joint Readiness Training Center and
Fort Polk Louisiana, and
US Army Corps of Engineers, Mobile District

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**FINAL**
**ENVIRONMENTAL ASSESSMENT**
**FOR CONSTRUCTION AND OPERATION OF A**
**DIGITAL MULTI-PURPOSE BATTLE AREA COURSE (DMPBAC)**

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February 2003

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# *SECTION 1.0*
# *PURPOSE AND NEED*

## *1.1 INTRODUCTION*

The Joint Readiness Training Center (JRTC) and Fort Polk, Louisiana, is one of the Army's four premier Combat Training Centers.[1] The JRTC and Fort Polk's maneuver and training ranges support brigade-level exercises for rotational (visiting) units as well as home-stationed units. The principal live-fire range used by rotational units at the JRTC and Fort Polk is the installation's Multi-Purpose Range Complex (MPRC). The MPRC is also the primary live-fire range for the Army's 2d Armored Cavalry Regiment (2d ACR), the largest unit assigned to the installation. To support the rotational units that will increasingly use the JRTC's facilities in the future, the Army proposes to establish a Digital Multi-Purpose Battle Area Course (DMPBAC) and complementary facilities at Peason Ridge, a major training site of the JRTC and Fort Polk. One unit that would use the DMPBAC is the 2d ACR, which the Army proposes to convert to the 2d Cavalry Regiment (2CR) and to equip with the Stryker Interim Armored Vehicle. The 2CR would also conduct home-stationed unit training on the installation's ranges and maneuver training areas. This environmental assessment (EA) evaluates the potential environmental and socioeconomic effects associated with the Army's proposed action.

The JRTC and Fort Polk is in Vernon Parish, in west-central Louisiana. The Main Post consists of 107,024 acres (167 square miles), which are divided between Army fee-owned land on the northern portion of the post (66,998 acres or 104.7 square miles) and Forest Service fee-owned land on the southern portion (40,026 acres or 62.5 square miles). Kisatchie National Forest land, which comprises the southern portion of the main post and is used intensively under the terms of a Special Use Permit (SUP) between the Forest Service and Fort Polk, is referred to as the Intensive Use Area (IUA). Another portion of the Kisatchie National Forest is used for less intensive military training under the terms of the SUP. This area, comprising 44,799 acres (70 square miles) south of the IUA, is known as the Limited Use Area (LUA). Peason Ridge is a noncontiguous training area approximately 15 miles north of the Main Post that the Army uses for maneuver and live-fire training. It is located in Natchitoches, Sabine, and Vernon Parishes. At Peason Ridge, the Army owns 33,011 acres (51.6 square miles) and the Forest Service owns four parcels totaling 480 acres (less than 1 square mile).[2] North of Peason Ridge is a part of the Kisatchie National Forest known as "Horse's Head" because of its shape. The Forest Service makes this area, consisting of 12,820 acres (20 square miles), available for limited training by the Army. Figure 1-1 shows the Army and Forest Service lands used by the JRTC and Fort Polk.

[1] The National Training Center at Fort Irwin, California, and the Combat Maneuver Training Center at Hohenfels, Germany, specialize in training "heavy" forces. The Battle Command Training Program, Fort Leavenworth, Kansas, conducts training for all types of forces through its division-level command post exercises.

[2] Under a Memorandum of Understanding dated January 6, 2003, based on authorities at Title 16 *U.S. Code* (U.S.C.), sections 505a–505b, and to facilitate land management and provide maximum use of federal land for authorized purposes, the Fort Polk Commander and the Forest Service Supervisor for the Kisatchie National Forest have proposed an interchange of land, in which the Forest Service will transfer to the Army administrative control of its 480 acres (four tracts) at Peason Ridge and the Army will transfer to the Forest Service administrative control of 480 acres (six tracts) imbedded at various locations in the IUA and LUA of the Calcasieu Ranger District, Vernon Unit. Until the interchange is approved and implemented (expected within 18 to 36 months of the MOU), primary responsibility for management of the Peason Ridge tracts remains with the Forest Service.

## 1.2 PURPOSE AND NEED

The purpose of the proposed action is to establish and operate a state-of-the-art live-fire and maneuver battle area complex for combined arms forces.

The need for the proposed action is based on the Army's nonnegotiable contract with the American people to fight and win the Nation's wars. The Army must be trained and ready to deter war in peacetime, to fight and control wars that do start, and to terminate wars on terms favorable to the United States and allied interests.[3] To meet these obligations, soldiers must be fully prepared for combat.

Maneuver and live-fire training exercises must realistically span time and space, and they must instill in soldiers the skills they need to win wars. For optimal effectiveness, live-fire exercise scenarios need to provide for training over a period of days without the interruptions of shifting between different ranges or training areas. This approach allows for comprehensive training in combat skills, extending from the time a unit receives an order to perform a mission through engagement of an adversary and consolidation of forces. Exercise scenarios must also provide realistic spatial experiences. Units need to train in moving over varying distances to their objectives. They must maneuver throughout combat areas consisting of a variety of terrain—open, forested, and urban. Soldiers must be able to engage targets quickly and accurately, especially when advancing with direct and indirect, organic, and supporting fires. Soldiers must learn to be fully aware of their situation and how to employ their weapons effectively, as called for by Army doctrine. Throughout training, the performance of individuals and units needs to be assessed and reviewed.

The JRTC and Fort Polk annually hosts extensive training exercises for visiting light brigades. The intensity and duration of these "rotations" at the Combat Training Center foreclose the use of many portions of the post's training areas to home-stationed units. Establishing a DMPBAC at Peason Ridge would provide a critical facility that can offer advanced unit training for ensuring the optimal readiness of both home-stationed and rotational unit which is currently lacking at the JRTC and Fort Polk.

## 1.3 THE NEPA PROCESS

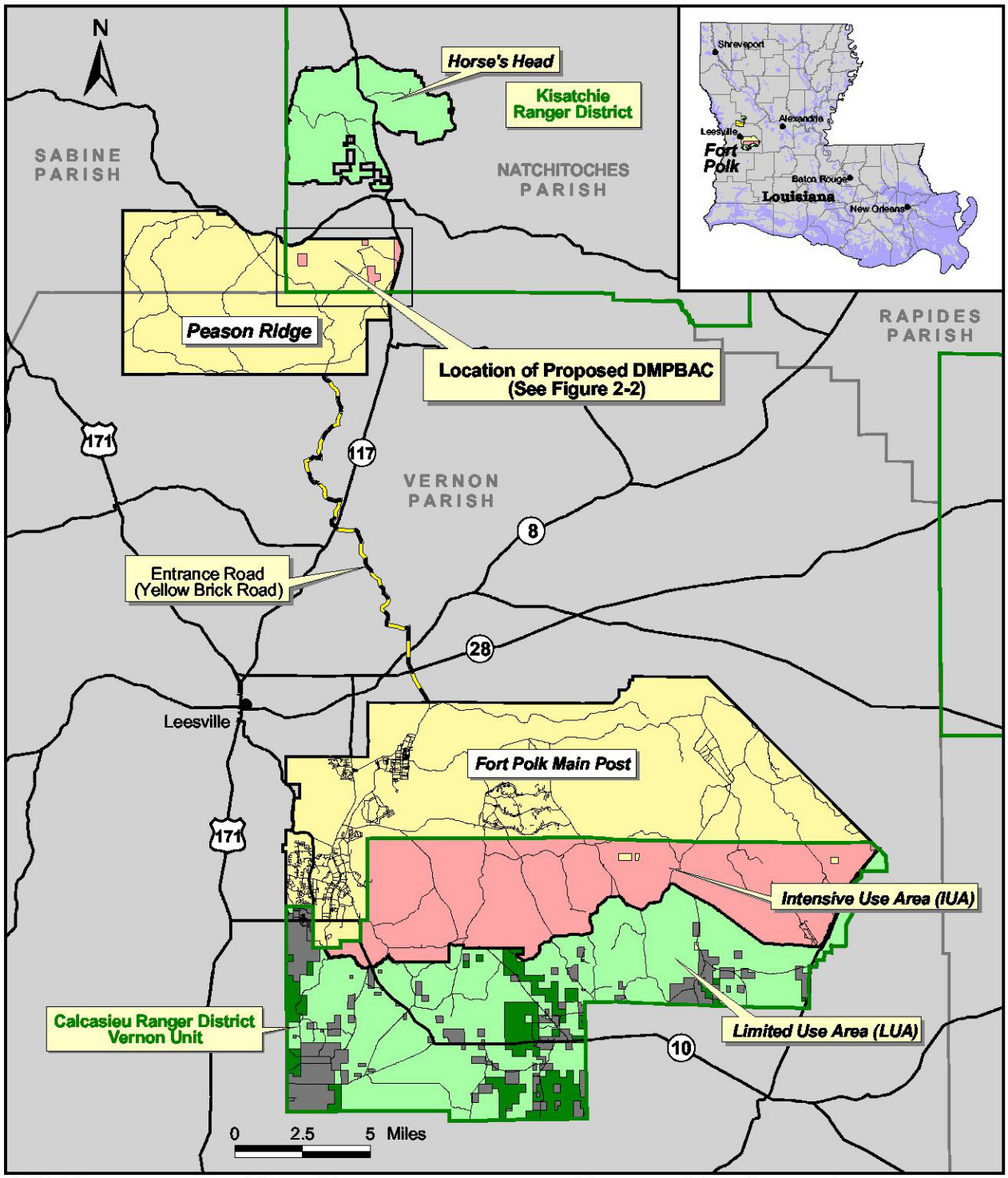
This EA has been developed in accordance with the National Environmental Policy Act of 1969 (NEPA) and implementing regulations issued by the Council on Environmental Quality and the Army.[4] Its purpose is to inform Army decision makers and the public of the potential environmental consequences of the proposed action and alternatives. This section addresses aspects of the NEPA process that are applicable to this EA.

### 1.3.1 Public Involvement

The Army has invited public participation in the NEPA process, to provide for means of communication with the public and to enhance its decision making. Public participation

[3] The Army is "organized, trained, and equipped primarily for prompt and sustained combat incident to operations on land. It is responsible for the preparation of land forces necessary for the effective prosecution of war…." [10 U.S.C. §3062(a)].

[4] Council on Environmental Quality guidance is contained in *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* at Title 40 of the *Code of Federal Regulations* (CFR), Parts 1500–1508. The Army also adheres to its NEPA regulation, published at 32 CFR Part 651 (*Environmental Analysis of Army Actions*).




**Installation Location**

**Figure 1-1**

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opportunities with respect to this EA and decision making on the proposed action are guided by 32 CFR Part 651 (*Environmental Analysis of Army Actions*). Upon completion, the EA will be made available to the public for 30 days, along with a draft Finding of No Significant Impact (FNSI). At the end of the 30-day public review period, the Army will consider any comments submitted by individuals, agencies, or organizations on the proposed action, the EA, or the FNSI. As appropriate, the Army may then execute the FNSI and proceed with implementation of the proposed action, or it may issue a Notice of Intent to Prepare an Environmental Impact Statement (EIS).[5]

### *1.3.2 Scoping*

Members of the community and other interested groups have been invited to participate in the scoping effort for the EA. On February 8, 2002, the Army sent out government-to-government consultation letters to federally recognized Native American tribes within the region of influence of the JRTC and Fort Polk. In addition, on February 8 and 11, 2002, the Army mailed letters and comment response forms to individuals, agencies, and groups that are within the region of influence of the JRTC and Fort Polk or previously expressed interest in the installation's environmental affairs program.

The scoping letters included information about the JRTC and Fort Polk and the scope of the environmental study being undertaken to analyze the potential effects of the proposed DMPBAC. The letter served two purposes. First, it provided the Army an opportunity to inform the federally recognized Native American tribes, the public, and interested agencies concerning the proposed action. Second, it offered the federally recognized Native American tribes, the public, local governments, other federal agencies, and state agencies an opportunity to submit written comments or suggestions concerning the scope of the issues to be addressed, alternatives to be analyzed, and environmental effects to be addressed in the EA.

Written comments were accepted by mail, e-mail, or fax. Comments concerning the EA were requested by May 11, 2002, addressed to Mr. Dan Nance, Public Affairs Office, 7073 Radio Road, Fort Polk LA 71459-5342.

On November 18, 2002, the Army hosted a public meeting at the U.S. Forest Service Work Station near Kisatchie, Louisiana. The Army provided notice of the meeting through local news media and to concerned citizens of the area surrounding Peason Ridge. The Army also sent letters to individuals and groups that had previously expressed interest in the installation's environmental affairs program. The meeting provided the Army an opportunity to further inform the public and allowed the public additional opportunity to submit written or oral comments or suggestions. Issues raised through written comments are shown in Appendix A.

### *1.3.3 Content*

An interdisciplinary team of environmental scientists, biologists, planners, economists, engineers, archaeologists, historians, and military technicians has prepared this document. Analysis of the proposed action in light of existing conditions results in identification, documentation, and

[5] The Forest Service will not issue a Decision Notice based on this EA.

evaluation of the potential environmental effects of establishing a DMPBAC and complementary facilities at the JRTC and Fort Polk.

Section 2.0 of this EA describes the proposed action and alternatives, including the no action alternative. The baseline against which effects are measured is described in Section 3.0. Resource areas and conditions addressed in the EA are land use, air quality, noise, hazardous materials and wastes, soils, water resources, biological and ecological resources, cultural resources, infrastructure, and socioeconomics. The consequences of implementing the proposed action are also described in Section 3.0, following the presentation of each resource area and condition. Analyses of potential effects identify adverse and beneficial direct and indirect effects and describe their nature. Cumulative effects and possible mitigation measures are discussed at the end of the section. Section 4.0 presents the EA's findings and conclusions.

### *1.3.4 Other NEPA Studies*

On March 8, 2002, the Army and the U.S. Forest Service jointly provided notice in the *Federal Register* of the agencies' intent to prepare an EIS for Force Transformation and Mission Capability Enhancements, JRTC and Fort Polk, Louisiana, and Long-Term Military Training Use of Kisatchie National Forest Lands. The EIS addresses the possibility of cumulative effects on local and regional resources from establishing a DMPBAC.

Information on the proposal to establish a DMPBAC and on the status of the EIS may be obtained through the Fort Polk Public Affairs Office, Attn: Mr. Dan Nance, 7073 Radio Road, Fort Polk, LA 71459-5342.

## *1.4 FRAMEWORK FOR DECISION MAKING*

A decision on whether to proceed with the proposed action rests on numerous factors, such as mission, technical matters, costs, and environmental considerations. In addressing environmental considerations, the Army is guided by several relevant statutes, regulations, and Executive Orders that establish standards for and provide guidance on environmental and natural resources compliance and planning. These include the Clean Air Act, Clean Water Act, Endangered Species Act, National Historic Preservation Act, Sikes Act, Resource Conservation and Recovery Act, Executive Order 11988 (*Floodplain Management*), Executive Order 11990 (*Protection of Wetlands*), Executive Order 12088 (*Compliance with Pollution Control Standards*), Executive Order 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*), and Executive Order 13045 (*Protection of Children From Environmental Health Risks and Safety Risks*). Where appropriate, key provisions of these statutes and Executive Orders are described in more detail in the text of the EA.[6]

[6] Additional information on statutes, regulations, and Executive Orders pertaining to the environment may be obtained through the Defense Environmental Information Exchange at http://www.denix.osd.mil.

# *SECTION 2.0*
# *PROPOSED ACTION AND ALTERNATIVES*

## *2.1 INTRODUCTION*

The JRTC and Fort Polk proposes to establish and operate a Digital Multi-Purpose Battle Area Course (DMPBAC) and complementary facilities for maneuver and live-fire combat skills training. The DMPBAC would enable platoon- and company-level training in maneuver and live fire to occur simultaneously with direct and indirect, organic, and supporting fires.[1] The complementary facilities, consisting of a shoot house, breach facility, urban assault course, and two live-fire villages, would enable instruction in additional combat skills for soldiers negotiating the battle area course. These facilities are further described at the end of this section.

Section 2.2 describes the no action alternative. Section 2.3 describes in detail the proposal to establish the DMPBAC and complementary facilities. Section 2.4 addresses alternatives to the proposed action.

## *2.2 THE NO ACTION ALTERNATIVE*

Under the no action alternative, the Army would not establish a DMPBAC and complementary facilities at Peason Ridge. Home-stationed units[2] and visiting brigades would continue to use the existing Peason Ridge maneuver areas, forward landing strip and drop zone, impact area, and artillery and other firing points.

The no action alternative, inclusion of which is prescribed by regulations issued by the Council on Environmental Quality, serves as a benchmark against which the potential effects of federal actions can be evaluated. It is evaluated in detail in this EA.

## *2.3 PROPOSED ACTION*

This section describes the Army's proposal to establish and operate a DMPBAC and complementary facilities at Peason Ridge.

Establishment of the DMPBAC would draw on selected features of existing technologies combined with capabilities of several standardized training facilities used by the Army at the JRTC and Fort Polk and other installations, including the digital multipurpose range complex, digital multi-purpose training range, infantry platoon battle course, infantry squad battle course, and attack helicopter gunnery range. The DMPBAC would provide the most realistic and

[1] Direct fires are those having a flat trajectory, such as bullets and tank rounds. Indirect fires are those normally having an arching trajectory, such as artillery and mortar rounds. Organic fires are those produced by weapons assigned to a unit as part of its Table of Organization and Equipment. Supporting fires are those produced by weapons not assigned to a unit. Examples of supporting fires to infantry units are close air support and naval gunfire.

[2] In addition to the 2d ACR, active Army units assigned to Fort Polk include the "Warrior Brigade," consisting of the 519th Military Police Battalion, 46th Engineer Battalion, 83d Chemical Battalion, 115th Field Hospital, and 142d Corps Support Battalion; Headquarters and Headquarters Company, U.S. Army Garrison; and the 1st Battalion, 509th Infantry Regiment (1-509 IR). Fort Polk also provides training opportunities for the 256th Brigade (Mechanized) (Enhanced), Louisiana Army National Guard (LANG), and various reserve component units.

instructive multiple purpose range possible. Complementary facilities would consist of a shoot house, breach facilities, an urban assault course, and two live-fire villages.

By combining elements of all these types of ranges and new, state-of-the-art technology in one location, the DMPBAC would accommodate a variety of maneuver and supporting arms combat training exercise scenarios under realistic battlefield conditions.

DMPBAC exercise scenarios would provide for multiple-task training. That is, through its layout and equipment, the battle area course would enable soldiers and leaders to develop the skills they need to detect, identify, engage, and defeat stationary and moving targets in a tactical array. A typical training scenario would have a unit receive its orders, move into an assembly area, conduct route reconnaissance, tactically relocate, respond to enemy pressure, breach obstacles, acquire and engage a series of targets, and seize a specified objective. Some scenarios would require intermediate and temporary transitions to defensive postures before assaults on final objectives. Scenarios would involve both day and night operations. Targets would electronically record hits scored, and reports would be transmitted to a central location, allowing objective and accurate reports on each unit's effectiveness in maneuver and weapons use. Following each exercise scenario, units would be provided after-action reviews of their performance.

The DMPBAC would be a training facility designed to meet current and future gunnery training and qualification requirements of home-stationed and rotational units. It would also support dismounted infantry platoon tactical live-fire operations independently of, or simultaneously with, supporting vehicles, as well as various combined live-fire exercises. Digital information and telecommunications technologies would safely track and manage all forces undergoing individual and collective live-fire training qualification, dry fire, and subcaliber engagements and provide training units with a timely and accurate after-action review.

The following paragraphs describe physical, operational, and management aspects of the proposed DMPBAC.

***Operational Usage.*** Most training events at the proposed DMPBAC would involve small arms. Table 2–1 summarizes principal operational aspects of use of the facilities at the DMPBAC. The proposed DMPBAC would be in operation an estimated 242 days per year. "Heavy weapons" use at the DMPBAC, projected to occur 82 days per year, would consist of 105mm weapon systems approximately 80 percent of the time and 120mm weapon systems approximately 20 percent of the time. Most heavy weapons would be fired from firing points in the central and southern portions of the DMPBAC. No more than one-third of heavy weapons use would occur in the northern portion of the range.

Units training at the DMPBAC would travel in tactical vehicles to and from Fort Polk primarily along the tank trail (also known as the "yellow brick road"). Vehicles being moved on board trucks by commercial contractors, however, could use state highway LA 117.

**Table 2–1**
**DMPBAC Operations**

| Operational Aspect | Remarks |
|---|---|
| Active range days | 242 days per year |
| Multiple Integrated Laser Engagement System (MILES) use (small arms blank ammunition) | 8 weeks per year |
| Urban assault course and live-fire village use (small arms) | 8 weeks per year |
| Force-on-force training scenarios | 5 weeks per year |
| JRTC live-fire events | 10 days per month<br>10 months per year |
| Green periods (range closed for maintenance) | 14 days per quarter |
| Heavy weapons use (105 mm, 120 mm) | 82 days per year |

***Qualification Trails and Targets.*** Designed with 2 qualification firing trails, 10 vehicle battle positions, and 10 machine gun bunkers, the DMPBAC would meet the Army's latest training standards. The battle area portion of the DMPBAC would cover approximately 700 acres (1.1 square miles). It would be somewhat rectangular and measure about 9,800 feet (1.86 miles) long by 3,000 feet (0.57 mile) wide. Each qualification trail would be about 9,800 feet (1.86 miles) long, with a maximum distance to downrange targets of 14,500 feet (2.75 miles) before entering the impact area. Firing positions along the qualification trails would provide line-of-sight visibility to 10 moving infantry targets, 216 stationary infantry targets, eight moving armor targets, and 50 stationary armor targets.[3] Firing points and targets would be oriented to direct rounds into the existing Peason Ridge impact area. Depending on the caliber and range of weapons in use, areas west of the impact area would be declared Surface Danger Zones and appropriately barricaded. Figure 2–1 shows key features of the range. High-explosive projectiles, e.g., from artillery, helicopters, and the Stryker Mobile Gun System, would be fired so as to land only within the established Peason Ridge impact area.

***Complementary Facilities***. Four facilities are proposed to enhance the effectiveness of training at the DMPBAC. These facilities, proposed locations of which are shown in Figure 2–1, would include the following:

- *Shoot House*. The shoot house would be a standard-design house (2,700 square feet) with a supporting operations/storage building (1,500 square feet) within the footprint of the DMPBAC. The training scenarios that would take place in this facility would be designed for soldiers to gain skills in various building clearing tasks typical of warfare in

[3] Because of possible unexploded ordnance (UXO) contamination in and near the present impact area, construction of DMPBAC defensive bunkers and target mechanisms would require UXO clearance activities over approximately 100 acres.

urban environments. The JRTC and Fort Polk currently has no facilities of this type. The shoot house would contain multiple entry points, day/night audio-video recording devices configured to provide coverage of the entire shoot house, and installed configurable targets. Supporting facilities would include electrical service, exterior lighting, targets and data cabling, water service, a septic system, storm drainage, environmental protection, gravel paving, fencing, and communications.

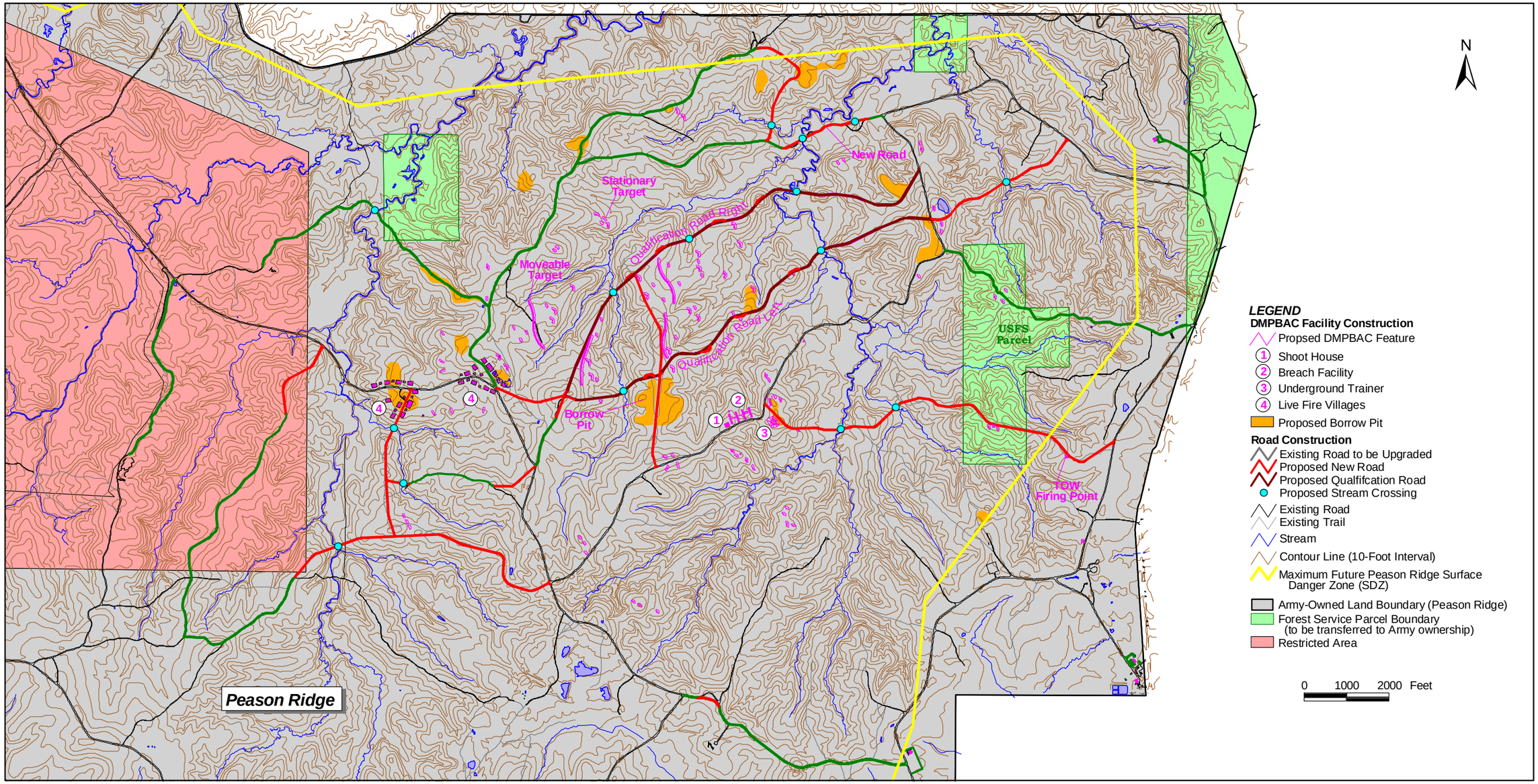
- *Breach Facility*. The breach facility would be designed to train individual soldiers and squads in the skills necessary to employ breaching techniques against hardened structures. Such skills are essential when soldiers must engage in a military operation on urban terrain (MOUT). The facility would consist of three stations, one each for door, window, and wall breaching. Uses of the facility would involve 5.56mm ammunition, hand grenades, shotgun rounds, detonation cord, blocks of C-4 explosive, and non-electric-firing blasting caps. Each station would be separated from the adjacent station by a berm to protect nonparticipants from potential injuries, and additional berms would flank each side of the entire facility. Live-Fire Exercise Breaching Facilities, prescribed in Training Circular 25-8 (Training Ranges), do not require infrastructure support (e.g., electricity, water). The breaching facility would be constructed with Operations and Maintenance funds rather than Military Construction program funds.

- *Urban Assault Course*. The urban assault course would be constructed as a standard design course with an operation/storage building (2,400 square feet) and five training stations, including an urban offense/defense building, an individual and team task technical station, a grenadier gunnery trainer, a squad and platoon task technical station, and an underground trainer.

- *Live-Fire Villages.* Each of two live-fire villages would consist of seven single-story building trainers, a two-story townhouse, three building facades, one courtyard, and one ventilated tunnel system. Other requirements would include the installation of day/night audio-video recording devices, three-dimensional human targets, and configurable targets. Supporting facilities would include electrical and water distribution, communications, road construction, and a parking lot.

***Buildings.*** In addition to the complementary facilities described above, the JRTC and Fort Polk would construct buildings for operation of the DMPBAC. A central control and after-action review building (6,000 square feet) would be constructed near the intersection of 505 Road South and Parameter Road. A range storage/maintenance building (3,800 square feet) and miscellaneous storage buildings (1,800 square feet) would be built in the proximity of the Peason Ridge cantonment area in the southeastern portion of the range near LA 117. These facilities would be supported by electric service; water and sewer; paving, walks, curbs, and gutters; storm water drainage; storm water detention basins; and security fencing and lighting.

***Roads and Stream Crossings.*** Activities at the DMPBAC would use approximately 12 miles of existing roads in the northeast portion of Peason Ridge. An additional 10.6 miles of new roads would be constructed to support maneuver and live fire and to enable target maintenance. Figure 2–1 shows the locations of existing and proposed roads. Each of the two qualification trails would be 20 feet wide; 505 South Road to the after-action review building would be 24 feet wide.




**Proposed DMPBAC Layout**

Source: Fort Polk GIS, 2002.

**Figure 2-1**

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Development of vehicle maneuver routes would require construction of 14 low-water crossings. Each of the two crossings over first-order streams[4] would consist of a concrete box culvert placed in the streambed to a depth of 2 feet to provide a 12-foot-wide crossing lane. Use of arch bridges for the remaining 12 low-water crossings would leave the natural streambeds undisturbed. Figure 2–1 shows the locations of the proposed low-water crossings.

***Land Disturbance and Erosion Control.*** Primarily to provide for line-of-sight weapon engagement of targets, approximately 914 acres (1.43 square miles) of forest would be clear-cut. To allow maneuver and visibility, another 2,285 acres (3.6 square miles) would be thinned. Except in areas of construction, trees would be removed by shearing the trees to within 4 inches of the ground. Stumps would be left in place rather than grubbed, and areas would be reseeded. During thinning, trees of approximately 13 to 14 inches diameter at breast height would generally be retained. Moreover, all snags and cavities would be retained, except for those at construction sites. Figure 2–2 shows areas proposed for clear-cutting, thinning, and grubbing. Treed buffer zones along riparian areas would be maintained. An estimated 1,450,000 cubic yards of earthworks construction would be required. Tank trails and all-weather service roads would provide for both tactical and administrative access to the range complex. Clearing and grubbing and construction would occur around target emplacements. Areas cleared and grubbed would be reseeded or otherwise stabilized.

At key locations, 40 sediment basins and terracing to divert runoff into these basins would be constructed. Within a given watershed the silt basins would be constructed before any other construction. The sediment basins would be maintained in place as part of range operations, with recovered sediments used to rehabilitate eroded areas. Figure 2–2 shows the locations of the proposed sediment basins.

***Range Weapons.*** The DMPBAC would support various organic and supporting weapons. These include troop- or company-organic weapons such as 9mm pistols and M16 rifles, light machine guns, .50 caliber machine guns, mortars (60mm, 80mm, 4.2-inch, and 120mm), and MK-19 automatic grenade launchers. Participating units might also employ or call for fire support by attack aircraft (AH-64 Apache, armed with Hellfire missiles, 2.75-inch folding fin rockets, and 30mm cannon); tanks (M1A1 Abrams, armed with the 120mm cannon and a .50 caliber machine gun); Bradley Fighting Vehicles (M2A1/A2 [infantry fighting vehicle] and M3A1/A2 [cavalry fighting vehicle] armed with the 25mm chain gun and TOW anti-armor missiles); the Mobile Gun System (armed with a 105mm cannon), Javelin and TOW anti-armor missiles, and 105mm and 155mm artillery; and Air Force attack aircraft. Some scenarios might involve use of obscurants (smoke) and battlefield effects simulators.

***Range Maintenance.*** Depending on the extent of damages incurred as a result of use of destructive weapon systems during training scenarios, targets would require periodic replacement or repair. The frequency and extent of major reconstruction of fortifications, involving earth-moving and replacement of timbers, would depend on the number of exercise events during a given time frame. Eroding areas and beaten zones would be continually restored to provide an undisturbed (new terrain) look. Sediment basins would be maintained to capture sediment from range use and maintenance activities. The JRTC and Fort Polk would employ an estimated 30 additional personnel for range operation and maintenance tasks.

[4] A first-order stream is one that has no tributaries upstream of the crossing point.

***Adaptive Management.*** In keeping consistent with environmental stewardship principles practiced by the JRTC and Fort Polk, the proposed establishment and operation of the DMPBAC includes identification of measures, built into the proposal, to sustain Peason Ridge resources. Specifically, the JRTC and Fort Polk proposes to develop and implement, before operation begins, a Range Maintenance, Erosion Control, and Water Quality Monitoring Plan. The plan would focus on monitoring the condition of resources at Peason Ridge and, through use of adaptive management techniques,[5] would provide for maintenance and restoration of resources adversely affected by range operations. Resources amenable to monitoring and maintenance under this approach include roads, stream crossings, sediment basins, ground cover, and other land conditions that might be adversely affected by training units' maneuvering and firing at the DMPBAC. The monitoring plan would also encompass measures related to control or abatement of noise arising from vehicle use or weapon firing. Specific actions under the plan would include the following:

- Development of watershed management plans using high-resolution watershed-based sediment loss and delivery models to protect surface waters and soils.

- Implementation of watershed-based monitoring and tracking studies to assess sediment loadings, signs of gully erosion, vehicle use at firing points, and long-term road and stream crossing effects (e.g., stream geomorphology, sediment loads) to protect surface water and soils.

- As indicated by the preceding monitoring data, design and installation of mitigation projects to reduce soil loss and sediment loadings (e.g., expansion of sediment basin network, sediment filters and chambers, land rehabilitation projects, preservation/ enhancement of vegetative buffers, riprap).

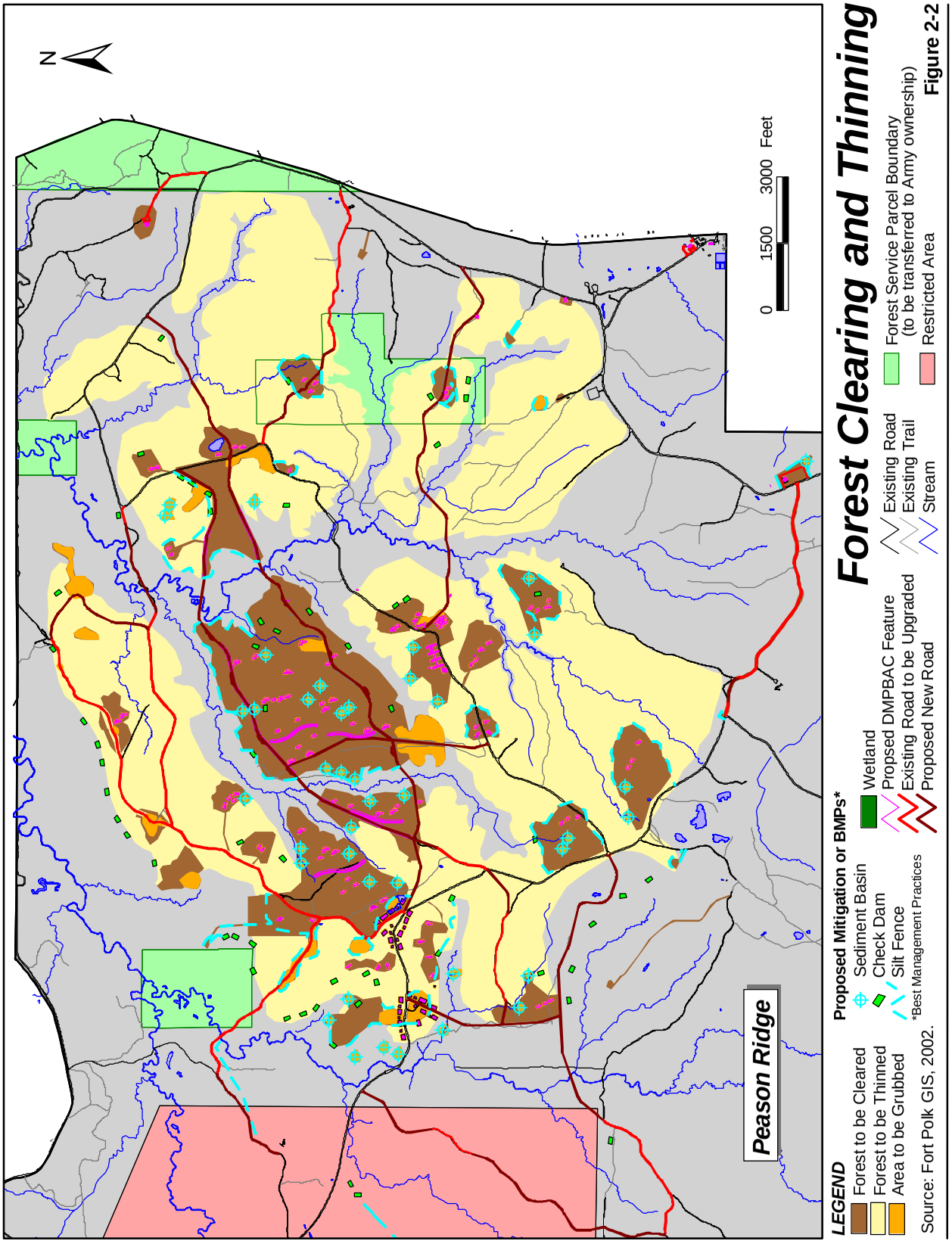
- Temporary closure of specific sections of training areas, as needed, to ensure that excessive soil loss does not occur.

- Through existing Installation Training Area Management (ITAM) and Land Rehabilitation and Maintenance (LRAM) programs, restoration of degraded training areas identified through post-training event monitoring efforts.

- Monitoring of noise levels north of the Peason Ridge area, where residential and church properties are located, and implementation of corrective actions, as necessary.

- Relocation of firing points farther away from the installation boundary, and dispersion of training area locations, as appropriate.

[5]Because ecosystems are complex and inherently unpredictable, the adaptive management approach embraces the uncertainties of system responses and attempts to structure management actions as planned and monitored experiments from which learning is a critical product to be used in subsequent management actions for the benefit of the system. Adaptive management, or "learning by doing," involves four iterative, continual types of actions: monitoring and gathering of information, evaluating ("lessons learned"), planning and setting directions, and acting. Collaboration with other agencies and neighboring communities occurs often.


Forest Clearing and Thinning
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Peason Ridge
LEGEND
Forest to be Cleared
Forest to be Thinned
Area to be Grubbed
Proposed Mitigation or BMPs*
Sediment Basin
Check Dam
Silt Fence
*Best Management Practices
Wetland
Propsed DMPBAC Feature
Existing Road to be Upgraded
Proposed New Road
Existing Road
Existing Trail
Stream
Forest Service Parcel Boundary
(to be transferred to Army ownership)
Restricted Area
Source: Fort Polk GIS, 2002.

**Figure 2-2**

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Maintenance of a forested buffer between firing points and the installation boundary to reflect and absorb sounds between noise generators and receptors.

- Restriction of firing activities during periods when weather conditions would most likely increase sound transmission.
- Development of an aggressive public outreach program.
- Post-training monitoring to assess damage to vegetation on training lands.

***Land Management Transition.*** Pursuant to a January 2003 Memorandum of Understanding, the Fort Polk Commander and the Forest Service Supervisor for the Kisatchie National Forest have proposed that the Forest Service transfer to the Army administrative control of its four tracts within Peason Ridge in exchange for six tracts now administered by the Army. Until that transfer is approved and implemented, Army activities with respect to the tracts at Peason Ridge will adhere to the terms of the Speical Use Permit (SUP), and the Forest Service will continue to exercise its land management responsibilities over those tracts in accordance with *Revised Land and Resource Management Plan, Kisatchie National Forest* (August 1999). That plan designates the Forest Service's tracts within Peason Ridge as Sub-Management Area 9E. The primary use of Sub-management Area 9E is military intensive use, for which has been designated the primary management goal of producing and sustaining a mixture of non-market resources.

Section 48 of the SUP controls removal of timber in training areas. Establishment and operation of the DMPBAC would primarily affect the Forest Service's tract of 240 acres near the eastern boundary of Peason Ridge. In this tract the Army would need to clear 22.7 acres of timber and thin another 107.6 acres. Construction activities would be sequenced to ensure that activities in this tract would occur toward the end of the project, after the Forest Service-Army land interchange is completed. In any event, portions of the Army's proposed action affecting the four Forest Service tracts at Peason Ridge would not be implemented until approval and completion of the land interchange. Until completion of the land interchange, activities on the Forest Service tracts within Peason Ridge would continue to be subject to current management programs, including observation of "green periods" directly supporting land management activities, unless access restrictions are otherwise lifted in conjunction with preconstruction activities.

## *2.4 ALTERNATIVES TO THE PROPOSED ACTION*

The Army considered four alternative ways to satisfy it's requirements for a new state-of-the-art training facility. The following subsections discuss those alternatives. For the reasons given, none of the four alternatives meet the purpose of and need for the proposed action and, accordingly, none are evaluated in detail in this EA.

### *2.4.1 Modify Existing Facilities*

Under the first alternative the Army would fulfill its requirements for a DMPBAC and complementary facilities by renovating, expanding, or converting existing training facilities at the JRTC and Fort Polk. The JRTC and Fort Polk operates a multipurpose range complex (MPRC) in the Main Post's Mill Creek Training Area. By separate action, the Army has proposed to digitize and upgrade the complex because the current facilities do not meet future standards. The range's dimensions do not allow for the increased vehicle dispersion and longer weapon effective

ranges associated with training of modern digitized units. Proposed modifications would modernize and reconfigure the existing range, resulting in its having 45 moving infantry targets, 233 stationary infantry targets (upgrade 197 existing and construct 36), 15 evasive capable armor moving targets (upgrade 12 existing and construct 3), 100 stationary armor targets (upgrade 60 existing and construct 40), 36 turret down defilade positions (upgrade 30 existing and construct 6), and a single point controller for oversight of all weapon firing systems present during gunnery exercises. Other features would include obstacle breach sites, defensive trenches, and machine gun bunkers. The primary facilities would be inside the perimeter of the range complex and would consist of a new central control/after-action review building (5,150 square feet), renovated general instruction building (1,600 square feet), existing central maintenance building, latrine/shower facility, helipad, plumb and synchronize stations, screen and bore sight lane pads, tactical vehicle staging and parking area, tank trails, all-weather service roads with culverts, low-water crossings, primary electric, target power and power centers, infrared cameras with towers for safety purposes, concrete turning pads, a field ammunition holding area, two live-fire villages (upgrade one existing and construct one), and site improvements. Road construction and improvement would result in 26.6 miles of roads. Up to 884 acres would require clearing. All moving targets would be hardwired, not battery-operated. Supporting facilities would consist of electrical distribution, fiber optic communications, copper pair telephone lines, security fencing, storm drainage, water, sewer, and site improvements. These changes would enable the JRTC and Fort Polk, as a Combat Training Center, to provide better support to light brigades and other units participating in exercises. In light of these changes, scheduling priorities for the existing range would continue to allow the 2d ACR's use of the digitized MPRC only on an intermittent and "as available" basis; the range would often be unavailable to train home-stationed units. For these reasons, this alternative is not feasible and therefore is not evaluated in detail in this EA.

### *2.4.2 Use Off-Post Facilities*

Under the second alternative the Army would fulfill its requirements for a DMPBAC and complementary facilities through the use of off-post private sector or other Army installation facilities. Use of private sector resources, obtained through lease or purchase, is not possible because no sources provide the types of land areas and equipment applicable to a DMPBAC and complementary facilities. Use of other Army installations' training facilities is not feasible because no such facilities are within a reasonable distance from Fort Polk. Reasonably nearby major Army facilities that support combat forces and therefore could accommodate training of the 2d ACR and other home-stationed units are Fort Food, Texas; Fort Riley, Kansas; Fort Benning, Georgia; Fort Stewart, Georgia; and Fort Campbell, Kentucky. Costs to transport Fort Polk units to those locations for training on a regular basis, as well as the time spent in transit to and from the installations, would be prohibitive. Moreover, units at the other installations have their own training requirements that, as a general rule, would make it difficult to schedule use of training facilities by visiting units like the 2d ACR. Because none of the five cited installations have units that perform the cavalry mission, their facilities could be inadequate to meet the training requirements of the 2d ACR. For these reasons, this alternative is not reasonable and therefore is not evaluated in detail in this EA.

### *2.4.3 Use Simulation Training*

Under the third alternative the Army would fulfill its requirements for a DMPBAC and complementary facilities through the use of simulation training. Simulation training with respect to the individual and unit training that would be obtained through use of the DMPBAC and

complementary facilities might occur in either of two modes. First, troops might be deployed to the field. During individual and unit troop and vehicle movement, preplaced explosives could mimic the noise and target destruction effects of small arms, mortar, artillery, and tank weapon fires and air-delivered ordnance. Such simulation could not, however, faithfully duplicate the noise and physical effects (shock wave, vibration) of the weapons being employed. Second, training might occur through use of technically sophisticated simulators. These devices are cost-effective in training soldiers in the basics of weapon use (aiming techniques, responding to firing orders), especially where use of the entire weapon system or its rounds is relatively expensive.

Effective battle training requires soldiers and leaders to be exposed to the elements during day and night operations; experience sleep deprivation; employ land navigation skills; practice fieldcraft, weapon handling, and fire and maneuver tactics; engage in tactical foot marches with combat loads in a continuous exercise over natural terrain; and conduct military operations precisely on time, regardless of intervening obstacles. These types of training experiences cannot be simulated.

Although simulation training is suitable for augmenting the training of soldiers and leaders in limited respects, it cannot fully replace the experiences derived from maneuver and live-fire training in the field. Simulation is unable to provide the degree of realism that soldiers and leaders must experience. It does not meet the objective to prepare forces fully for combat. For these reasons, this alternative is not reasonable and therefore is not evaluated in detail in this EA.

### *2.4.4 Site the DMPBAC Elsewhere On-Post*

Under the fourth alternative the Army would fulfill its requirements for a DMPBAC and complementary facilities through the siting of the DMPBAC and complementary facilities at a location other than the northeast portion of Peason Ridge. The DMPBAC would require substantial land area to accommodate maneuvering and firing. In addition, a candidate DMPBAC site would require an impact area and adequate Surface Danger Zones and other buffer zones to ensure the safety and compatibility of adjacent land uses.

Review of potential alternative locations for a DMPBAC shows that none are reasonably available at the JRTC and Fort Polk. The northern portion of the Main Post and the IUA comprise land areas of sufficient dimension to accommodate a range like the DMPBAC. Those areas, however, currently support a high operational tempo of rotation exercises that involve relatively large numbers of personnel (multiple battalions) over large areas while engaged in specific events. Establishing a DMPBAC that would be oriented to allow use of existing impact areas would severely disrupt or deny the ability of the Combat Training Center to support those large events. It would also foreclose or constrain use of training areas currently needed to support other training of home-stationed units.

Establishment of the DMPBAC and associated impact area in the LUA would be foreclosed by the terms of the Army's SUP with the Forest Service. That agreement prohibits live-fire activities in the LUA.

Sufficient acreage to accommodate the DMPBAC other than the northeast portion of Peason Ridge (Training Areas 5 and 6) is present in the southwest portion of Peason Ridge. Those general locations provide habitat for several clusters of the red-cockaded woodpecker, an endangered species. Establishment of firing points and firing lanes through those areas would be

severely limited and result in an imposition of unrealistic constraints to maneuver and using units. Potential levels of disturbance of the endangered species could be substantial. Combined, these limitations would unacceptably reduce the value of training. The forward landing strip and drop zone in the northwest portion of Peason Ridge make that area unsuitable as a site for a live-fire range complex.

For these reasons, alternative locations for the DMPBAC at the JRTC and Fort Polk are deemed not reasonable and, accordingly, are not further evaluated in this EA.

# SECTION 3.0
# AFFECTED ENVIRONMENT

## 3.1 INTRODUCTION

This section describes current environmental and socioeconomic conditions at the JRTC and Fort Polk, with emphasis on Peason Ridge and the surrounding area. It describes each resource or topical area that could be affected by implementing the proposed action. This section also provides information that serves as a baseline from which to identify and evaluate likely environmental and socioeconomic changes that would result from implementation of the proposed action and alternatives. The information has been provided in only enough detail to understand the effects of the alternatives on the environment. It depicts conditions as they currently exist or in accordance with the most recent available data. The effects of the proposed action and alternatives are discussed in Section 4.0.

## 3.2 GEOGRAPHIC SETTING

Fort Polk is in the West Gulf Coastal Plain section of the Atlantic Plain Physiographic Province, a gently sloping, moderately dissected plain dipping from the Ozark and Ouachita mountain ranges to the north of the installation southward to the Gulf of Mexico. The installation is in Vernon Parish, in west-central Louisiana. The Peason Ridge training area, site of the proposed DMPBAC, is Army fee-owned land located about 15 miles to the northwest of the Main Post (Figure 2–1). This training area covers portions of Vernon, Sabine, and Natchitoches Parishes.

## 3.3 CLIMATE

The region's climate, classified as humid subtropical, is dominated by alternating flows of warm, moist air moving from the south off the Gulf of Mexico, and cold, dry air from the north. Summers are warm, with average temperatures ranging from 70 degrees Fahrenheit ($^{o}$F) to 90 $^{o}$F. The mild winters have average temperatures ranging from 45 $^{o}$F to 60 $^{o}$F. Precipitation, mostly in the form of rainfall, is typically brief but intense in the summer, and less intense but of greater duration in the winter. Average annual rainfall is 59 inches, with 28 inches falling during the rainy winter season (December through March), and 16 inches during the drier summer months (June through September) (KNF, 1997; US Army and USDA Forest Service, 1998).

## 3.4 LAND USE

### 3.4.1 Installation Land Use

The primary land use at the Fort Polk Main Post and Peason Ridge is military training and associated support functions. The Main Post contains about 106,000 acres, including 66,000 acres of Army-owned land and 40,000 acres of Forest Service-owned and Army-permitted land in the Intensive Use Area (IUA). The Fort Polk Main Post consists of three general land use categories: the cantonment area (8,000 acres), training areas (92,000 acres), and impact areas (5,400 acres). Peason Ridge includes about 33,480 acres, including about 33,000 acres of Army-owned land, and 480 acres of Forest Service-owned land in four parcels (ENRMD, 2001; KNF, 1999). The Army has a permit to use these parcels for military intensive use. The Army and Forest Service recently signed a Memorandum of Understanding (MOU) to initiate an interchange of these four Forest Service parcels at Peason Ridge for approximately 480 acres of Army-owned land south of the Main Post that are embedded in Forest Service-owned land. This interchange would allow consolidation of land ownership at Peason Ridge by the Army (US Army and USDA Forest Service, 2003).

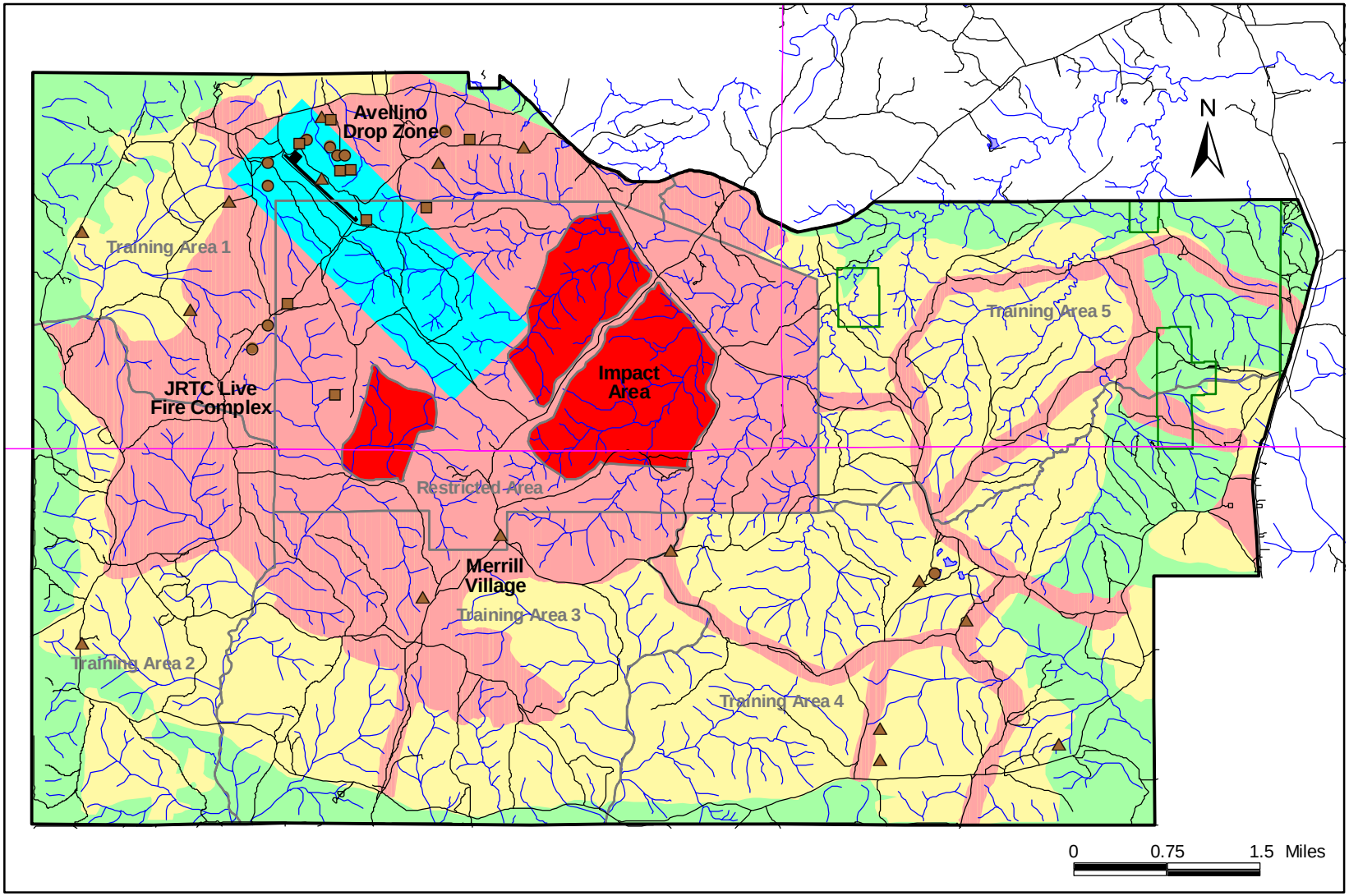
***Peason Ridge Land Use.*** The DMPBAC is proposed to be located in the northeast quarter of the Peason Ridge training area. Peason Ridge is used heavily for live-fire operations because it contains a large, restricted impact area surrounded by five training areas. It is currently used for JRTC force-on-force maneuver activities and for home-stationed unit training (ENRMD, 2001). Existing training facilities at Peason Ridge include the Avellino drop zone, the JRTC live-fire complex, Merrill Village (live-fire village), remote villages, fortified positions, raid sites (range facilities with trench lines), artillery and other firing points, and other facilities (JRTC and Fort Polk, 2001).

***Military Intensity Zones.*** Maps of military training intensity zones (Figure 3-1) have been developed to depict areas of high, moderate, and low intensities of military training at the JRTC and Fort Polk. The zones are derived from trends in historical and current training activities, and they consider factors like number of troops, annual training days, type of training activity, and presence of training facilities (ENRMD, 2001). High-intensity training takes place on about 39 percent of Peason Ridge and occurs primarily around the restricted area in the central portion, around the JRTC live-fire complex west of the restricted area, and along road corridors. Training on the remainder of Peason Ridge is generally classified as moderate-intensity (38 percent of Peason Ridge) in the area surrounding the restricted area, and low-intensity (18 percent) along the perimeter. The remaining 5 percent of Peason Ridge is impact areas. High-intensity training activities sometimes result in maneuver damage, which often involves soil disturbance, particularly in areas nearly or completely devoid of vegetation (Freese and Nichols, Inc., 2002). The locations and extent of disturbances to soils that required repair have been documented for previous JRTC rotations and are shown in Figure 3–1.

***Maneuver Impact Miles.*** Training load is expressed in terms of maneuver impact miles, or MIMs. One MIM is the equivalent impact of an M1A2 tank traveling 1 mile while participating in an armor battalion field training exercise. The impacts of all mission activities are converted to MIMs by combining prescribed tactical vehicle mileage by vehicle, unit, and event and values that represent severity of impact of events and vehicles on the soil. Using MIMs allows the impact of all mission activities to be aggregated and expressed as a single training load. MIM values for a given mission activity remain constant across the Army, regardless of location. The current annual training load for Peason Ridge is about 73,000 MIMs.

***Land Cover.*** Based on 1992 classified satellite images of vegetation, Peason Ridge is predominantly covered by coniferous forest (55 percent), followed by scrub/shrub and deciduous/mixed forest (16 percent each), and grasses (8 percent) (USGS, 1992). Table 3.4–1 lists the land cover acreage, and Figure 3–2 shows the land cover types on Peason Ridge.

The Forest Service has designated "landtype associations" (LTAs) for National Forest lands. LTAs are recurring areas of land that are fairly uniform in land-surface form, subsurface geological materials and features, soil patterns, and historical landscape vegetation. All of Peason Ridge is classified as Kisatchie Sandstone Hills LTA, which is characterized by hilly topography with 5 to 25 percent slope, the presence of the Catahoula geologic formation at the surface, and a historical landscape vegetation type of longleaf pine (KNF, 1999; Fort Polk GIS, 2002).




# Land Use and Training Intensity

***LEGEND***

- Drop Zone
- Impact Area
- Training Area Boundary

**Training Intensity**

- High
- Moderate
- Low

- Existing Road
- Stream
- Forest Service Parcel Boundary (to be transferred to Army ownership)

**Historic Maneuver Damage Points**

- ▲ 1994-1999
- ● 2000-2001
- ■ 2002

Source: Fort Polk GIS, 2002.

**Figure 3-1**

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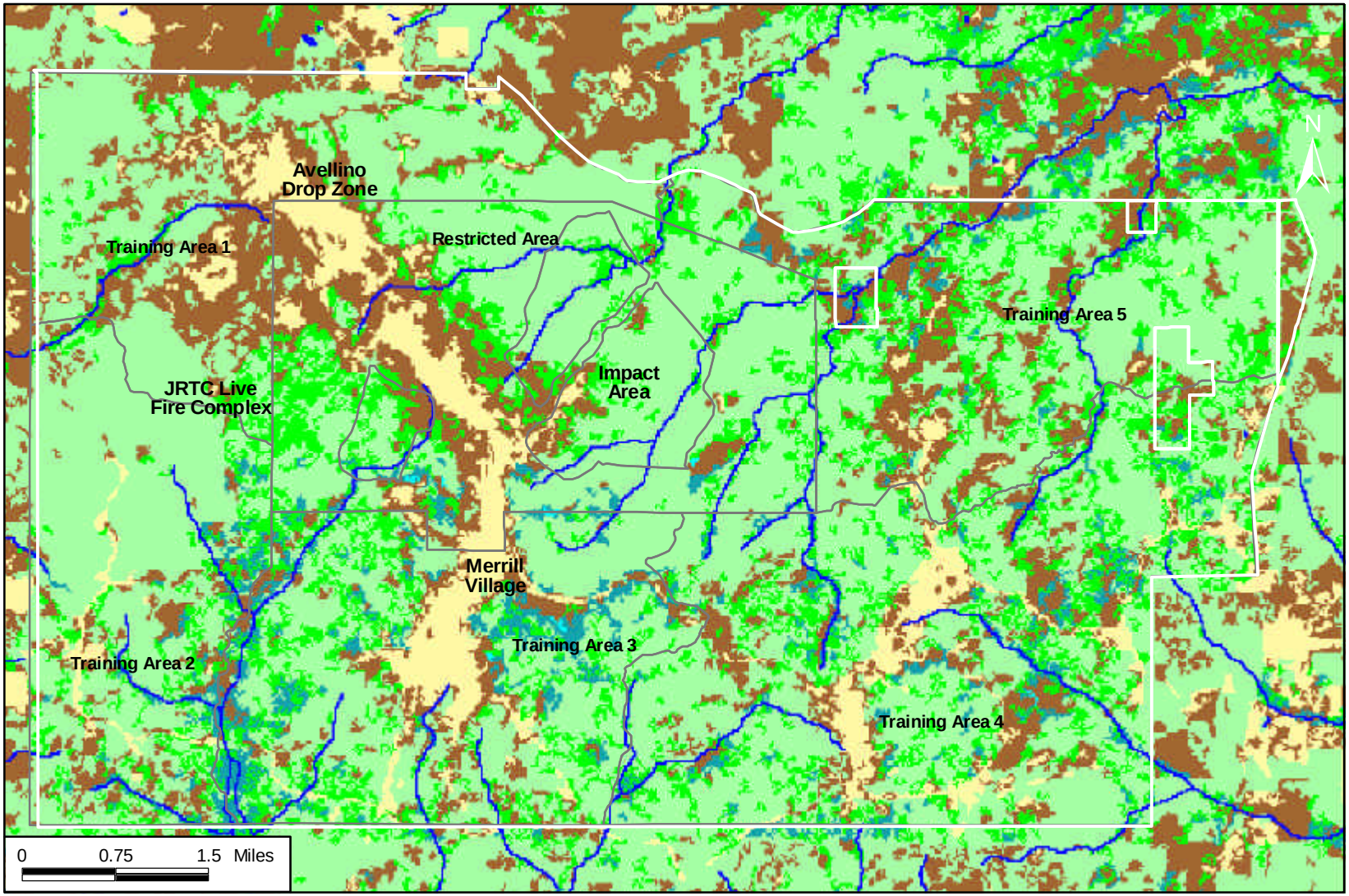


***LEGEND***

Installation Boundary

Training Area Boundary

**Land Cover Types**

Deciduous/Mixed Forest

Coniferous Forest

Scrub-Shrub

Grasses

Forested Wetland

Emergent Wetland

Water

Source: USGS, 1992.

# *Peason Ridge Land Cover Types*

**Figure 3-2**

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**Table 3.4–1**
**Land Cover Types on Peason Ridge**

| Land Use Type | Acreage | Percent of Total |
|---|---|---|
| Deciduous/mixed forest | 5,182 | 15.5 |
| Coniferous forest | 18,330 | 54.8 |
| Scrubshrub | 5,482 | 16.4 |
| Grasses | 2,498 | 7.5 |
| Forested wetland | 1,270 | 3.8 |
| Emergent wetland | 16 | 0.1 |
| Water | 672 | 2.0 |
| **Total acreage** | 33,450[1] | 100.0 |

Source: USGS, 1992.
[1] The numbers in the Total acreage row approximate but do not match the official acreage of Peason Ridge (33,480 acres) because of differences in calculation methods.

### *3.4.2 Surrounding Land Use*

Land uses surrounding Peason Ridge consist primarily of private land used for timber production and some lands used for agriculture (ENRMD, 2001). The timberlands are owned and operated by various timber companies, including Boise Cascade, Temple-Inland, and R.O. Martin (JRTC and Fort Polk, 2001). The population density within 2 miles of the proposed DMPBAC is seven persons per square mile (USDOC, Census, 2000). The nearest community with commercial development such as strip malls, hotels, and other businesses is the city of Leesville, 10 miles to the south.

***Future Development in the Region of Influence***. Louisiana State Highway 28 between Alexandria and Leesville, which runs east-west about 10 miles south of Peason Ridge, is being upgraded to a four-lane highway. Sawtimber production in the three-parish region of influence (ROI) surrounding Peason Ridge (Natchitoches, Sabine, and Vernon Parishes) increased 20 percent between 1970 and 2001, and almost all of that increase occurred in Vernon Parish (LDAF, 1971, 2002). This upward trend in timber production would be expected to continue based on the region's projected increase in the services industry over the next 20 years (Woods & Poole Economics, 2002). The amount of lands used for agriculture would not be expected to increase because the land is more suitable for timber production. No other large-scale development projects planned in the ROI have been identified.

## *3.5 GEOLOGY AND SOILS*

### *3.5.1 Topography*

Peason Ridge is about 15 miles to the northwest of Fort Polk Main Post. The land surface of Peason Ridge is characterized by dissected, well-rounded hills. Flat to gently rolling surfaces occur along major drainageways. The highest elevation, 489 feet is in the northwest portion, and the lowest, 250 feet, is on the long branch of Odom Creek floodplain. Local relief is generally less than 100 feet and is the result of natural erosional processes (USDA, SCS, n.d.).

### *3.5.2 Geology*

Fort Polk, including the Peason Ridge area, is situated in the Gulf Coastal Plain Physiographic Province, which was formed by the nearshore deposition of sediments during the Miocene Epoch, approximately 24 to 25 million years ago. During this epoch, changes in the environment and

types of material being deposited resulted in a complex series of sediment layers. Sand commonly grades laterally and vertically into silt or clay, making correlation of individual sediment beds difficult (USDA, SCS, n.d.).

During the Tertiary Period (65 million years ago), land subsided in the southern Louisiana area concurrent with the accumulation of sediments. The result was a southward regional dip of all sediment beds in the area. In most of the sediment beds that can be correlated, the rate of dip increases toward the south, ranging from 50 to 70 feet per mile to as much as 150 feet per mile farther south. Generally, all geologic units thicken in the direction of the dip (USDA, SCS, n.d.).

The Carnahan Bayou member of the Fleming Formation, Miocene in age, underlies Peason Ridge. The Carnahan Bayou member consists of clays, silts, and sands that in localized areas are consolidated into shale, siltstone, and sandstone. A thin layer of residual soil covers the formation except in streams cuts, where small outcrops are exposed. Deposited in a historical fluvial (floodplain) environment, the Carnahan Bayou member dips and thickens southward at a rate of 50 feet per mile (USDA, SCS, n.d.).

***Mineral Development.*** There are private mineral rights consisting of quarrying and borrow pits on Peason Ridge.

***Seismicity.*** The Fort Polk region is considered to be at the lowest level of risk for earthquake activity because of its low historical earthquake occurrence rate and its subsurface formations (USGS, 2002).

### *3.5.3 Soils*

Soils in the Peason Ridge study area are derived from in-place weathering of underlying rock strata, except in the active floodplain of waterbodies, where soils consist of alluvial silts and sands. In general, most soils in the study area are highly weathered and acidic and have low fertility. The following are the six predominant soil associations that make up most of the soils occurring in the Peason Ridge study area.

*Guyton-Urbo*. Very deep to deep soils found on floodplains and terraces with slopes of 0 to 1 percent. This unit is poorly drained silt loam to silty clay loam.

*Malbis-Kirbyville-Niwana*. Very deep soils found on broad ridgetops, side slopes, and smoothed mound areas with slopes ranging from nearly level to moderately sloping. This unit is a moderately well-drained, very fine to fine sandy loam.

*Eastwood-Vaiden-Hornbeck*. Deep to very deep soils commonly found on ridgetops, side slopes, and interstream divides with slopes of 1 to 15 percent. This unit is somewhat poorly drained to moderately well-drained loam to silty loam.

*Briley-Ruston-Trep*. Very deep soils found on ridgetops and side slopes with a slope range of 1 to 12 percent. This unit is characterized by well-drained, loamy fine sand.

*Mayhew-Corrigan-Letney*. Moderately deep to very deep soils found mostly on ridgetops with slopes ranging from 1 to 12 percent. This unit is a poorly drained to moderately well-drained silt loam to loamy sand.

*Kisatchie-Rayburn*. This soil unit is characterized by deep to moderately deep soils found mostly on side slopes with slope values ranging from 5 to 20 percent. It is a well-drained to moderately well-drained fine sandy loam.

Hydric soils are defined as soils characterized by or having an abundance of moisture and are one indicator of wetlands. Soils considered hydric may impose limitations on engineering or construction use because of their excess moisture. Three of the dominant soils on Peason Ridge,

the Guyton-Iuka Complex, Mayhew Silt Loam, and Osier Loamy Fine Sand, are considered hydric and cover about 5,700 acres.

A total of seven soil series, summarized in Table 3.5–1, have been identified as commonly occurring (more than 1,000 acres) in the northeast quarter of Peason Ridge, where the DMPBAC is proposed to be located. These seven soil units are subsets of the soil associations listed above.

Soils listed as having a high erosion potential are highly susceptible to water erosion. Five of the seven soils listed in Table 3.5–1 are identified as being moderately to highly erodible. The amount of erosion occurring depends on the amount of rainfall, the inherent erodibility of each particular soil, vegetative cover, gradient, and slope. Figure 3–3 shows highly erodible soils covering about 17,000 acres, or 53 percent, of the soils on Peason Ridge. A component of the Army's Training and Testing Area Carrying Capacity (ATTACC) model was used in conjunction with current information on training intensity to predict the extent of soil disturbance due to training on Fort Polk lands. ATTACC is the standard Integrated Training Area Management (ITAM) methodology for estimating training land carrying capacity by relating training load, land condition, and land condition practices (ENRMD, 2001). Based on the output from the ATTACC model, the current average soil loss rate for Peason Ridge Training Area 5, taking into account current training intensity, is 4.48 tons/acre/year.

**Table 3.5–1**
**Soils Series Occurring in the Fort Polk Study Area**

| Soil Series | Drainage Class | Hydric | Erosion Hazard | Limitations | Occurrence in Study Area | Acres in Peason Ridge |
|---|---|---|---|---|---|---|
| Kisatchie-Rayburn Fine Sandy Loam, 5%–20% slopes | Moderately well-drained | No | Moderate | Slope, erosion potential, shrink swell | Convex, plain, or concave side slopes | 14,746 |
| Mayhew Silt Loam, 1%–5% slopes | Poorly drained | Yes | High | Erosion potential, Shrink swell | Broad ridgetops | 3,440 |
| Briley Loamy Fine Sand, 1%–5% slopes | Well-drained | No | Low | No significant limitations | Convex ridgetops | 3,320 |
| Corrigan Fine Sandy Loam, 1%–5% slopes | Moderately well-drained | No | Moderate to High | Erosion potential, shrink swell | Ridgetops | 3,236 |
| Guyton-Iuka Complex | Poorly drained | Yes | Moderate | Flooding, wetness | Floodplains, natural flats | 2,307 |
| Briley Loamy Fine Sand, 5%–12% slopes | Well-drained | No | Low | No significant limitations | Uplands, side slopes | 1,810 |
| Rayburn Fine Sandy Loam, 1%–5% slopes | Moderately well-drained | No | High | Erosion potential | Convex ridgetops | 1,399 |

Source: USDA, SCS, n.d.

The flat to gently rolling terrain at Peason Ridge facilitates vehicle maneuvers, but these maneuvers pose a high potential for erosion due to the presence of highly erodible soils. Repetitive maneuvering of heavy vehicles over the sandy ridgetops results in a loss of vegetative cover. During rainfall events, disturbed soil moves with surface water runoff through natural drainageways and into streams. The result is often the loss of downslope vegetation and siltation of streams. Excess siltation can harm plants and aquatic life in the waterways. Information on the effects of sedimentation on streams and waterways is contained in Section 3.6, Water Resources. Issues involving soil contamination are described in Section 3.13, Hazardous Waste and Toxic Materials.

Fort Polk has established programs and procedures to minimize soil erosion on all of the JRTC and Fort Polk. Under the maneuver damage inspection and repair program, training areas are inspected following a rotation to identify sites needing repair. Sites not adequately repaired by rotational units are stabilized by installation personnel to minimize soil displacement. Repair and stabilization methods may include contouring, grading, seeding, and fertilization, as needed. These measures help to establish vegetative cover, which combats erosion by absorbing the kinetic energy of raindrops and slowing the rate of runoff (ENRMD, 2001).

In addition to repairing maneuver damage at individual sites, Fort Polk implements large-scale structural erosion control measures. The installation began a practice of installing sediment basins along with the construction of the MPRC in the late 1980s. For a more detailed discussion of sediment basins, see Section 4.6, Water Resources. Sediment basins have been installed at sites subject to intensive training activities throughout Fort Polk and Peason Ridge. See Figure 3–3 for locations of sediment basins.

The JRTC and Fort Polk also maintains a comprehensive watershed-based management plan as part of the overall Environmental Management Plan, as part of the Spill Prevention Control and Countermeasure Plan (SPCCP), and the Storm Water Management Programs. Watershed management plans focus heavily on upland controls to limit sediment yields, reduce runoff, and return rill/sheet erosion into nondestructive sheet flow. These programs not only apply to training lands, but to all lands under jurisdiction of the JRTC and Fort Polk.[1]

### *3.5.4 Prime Farmland*

Prime farmland soils are protected under the Farmland Protection Policy Act (FPPA) of 1981. The intent of the act is to minimize the extent to which federal programs contribute to the unnecessary or irreversible conversion of farmland soils to nonagricultural uses. The act also ensures that federal programs are administered in a manner that, to the extent practicable, will be compatible with private, state, and local government programs and policies to protect farmland. The Natural Resources Conservation Service (NRCS) is responsible for overseeing compliance with the FPPA and has developed rules and regulations for implementing the act (see 7CFR, Part 658, revised January 1, 1998).

Less than 15 acres of prime farmland within Peason Ridge will be used for the construction of permanent structures. Given the small area of these soils that could possibly be adversely affected by construction of the DMPBAC, a Farmland Conversion Impact Rating form under the Farmland Protection Policy Act (FPPA) is not warranted.

[1] Kincanon, R. Department of Public Works, ENRMD, CMD - Installation Environmental Engineer.

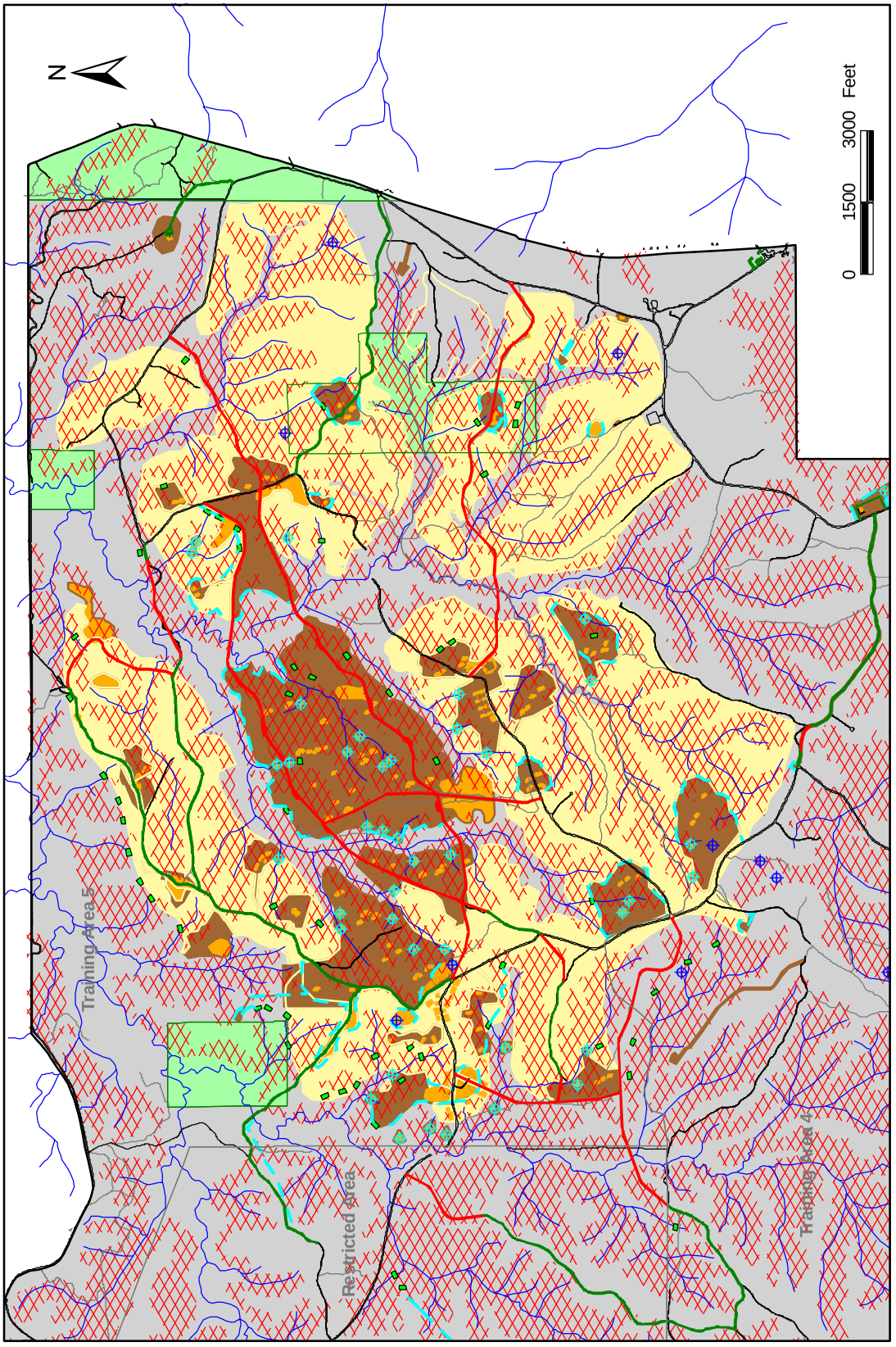
Highly Erodible Soils
N
0
1500
3000 Feet
Training Area 5
Restricted Area
Training Area 4
LEGEND
Existing Sediment Basin
Highly Erodible Soil
Forest to be Cleared
Forest to be Thinned
Area to be Grubbed
Proposed BMPs*
Sediment Basin
Check Dam
Silt Fence
*Best Management Practices
Existing Road to be Upgraded
Proposed New Road
Existing Road
Stream
Training Area Boundary
Forest Service Parcel Boundary
(to be transferred to Army ownership)
Source: Fort Polk GIS, 2002.

Figure 3-3

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## 3.6 WATER RESOURCES

### 3.6.1 Peason Ridge Watersheds

#### 3.6.1.1 Watershed Characterization

A watershed is an area, measured in a horizontal plain, and enclosed by a topographic divide, which contributes direct surface runoff into a stream (Sloss, 1991). The Peason Ridge area lies within three major watersheds: Lower Sabine River basin, Upper Calcasieu River basin, and Lower Red-Lake Iatt basin. The basins are also described by their hydrologic cataloging units (HUC), as depicted in Figure 3–4, 12010005 (Lower Sabine River), 11140207 (Lower Red-Lake Iatt), and 08080203 (Upper Calcasieu River). The HUC, established by the U.S. Geologic Survey (USGS), is an eight-digit identification convention that reduces misidentification of watersheds. It is a geographic area representing part or all of a surface drainage basin, a combination of drainage basins, or a distinct hydrologic feature. These watersheds were further delineated into subwatersheds for the purpose of evaluating water quality at a finer resolution. These basins experience high runoff and exhibit rapid changes in creek stages during heavy rainfall (USGS, 1998).

***Flows and Exchanges.*** There are no USGS-maintained flow stations located within the watersheds in Peason Ridge. Annual daily median flows for streams located in Peason Ridge were estimated by Freese and Nichols, Inc. and described in *Evaluation of Surface Water Management Needs for Fort Polk and Peason Ridge, Louisiana, 1998.* This provides a relative index of the flow characteristics among the watersheds. Table 3.6–1 lists the estimated annual daily median flow for seven streams. The flow estimates apply to the point where each stream crosses the installation boundary.

**Table 3.6–1**
**Estimated Annual Daily Median Flow For Seven Streams in Peason Ridge**

| Waterbody | Watershed Area (sq mile) | Median Predicted Discharge (cfs) | S.E.E. (cfs) | Min (cfs) | Max (cfs) |
|---|---|---|---|---|---|
| Peason Ridge | | | | | |
| West Anacoco Creek | 3.68 | 1.09 | 0.77 | 0.32 | 1.85 |
| Lyles Creek | 4.09 | 1.16 | 0.82 | 0.34 | 1.97 |
| Sandy Creek | 10.52 | 2.25 | 1.59 | 0.66 | 3.84 |
| Odom Creek | 7.09 | 1.66 | 1.18 | 0.49 | 2.84 |
| Comrade Creek | 3.12 | 0.99 | 0.70 | 0.29 | 1.69 |
| Martin Creek | 4.91 | 1.30 | 0.92 | 0.38 | 2.21 |
| Dowden Creek | 10.66 | 2.27 | 1.61 | 0.67 | 3.88 |

Source: Freese and Nichols, Inc., 1998.
Note : S.E.E. = standard error of estimate, cfs = cubic feet per second.

#### 3.6.1.2 Water Quality

##### 3.6.1.2.1 Applicable Standards

The Louisiana Department of Environmental Quality defines surface water quality standards to protect designated uses of surface waters in Louisiana under Title 33, Part IX – Water Quality Regulations, Chapter 11 – Surface Water Quality Standards (LDEQ, 2002d). Water Quality Standards consist of three components: use designations, general and numeric water quality criteria necessary to protect those uses, and an antidegradation statement. Furthermore, water

quality standards serve the dual purposes of establishing the water quality goals for a specific waterbody and serve as the regulatory basis for the establishment of water quality-based treatment controls and strategies beyond the technology-based levels of treatment required by section 301(b) and 306 of the Clean Water Act (CWA).

All streams in Louisiana, including those flowing from Peason Ridge, are minimally assigned the uses of primary contact recreation, secondary contact recreation, and fish and wildlife propagation, although more restrictive uses may be assigned to specific sections of a waterbody (LDEQ, 2002d). The classification "outstanding natural resource water" (LA Title 33 Part IX, Chapter 11, 2001) is an example of a more restrictive use. Sections of Bayou Kisatchie and the Calcasieu River, downstream of Peason Ridge, are classified outstanding natural resource waters.

Title 33 contains general criteria statements as well as a wide range of numeric water quality criteria for pesticides and PCBs, volatile organic chemicals, acid- and base-extractable organics, other organics, metals and inorganics, as well as conventional pollutants like biochemical oxygen demand (BOD), pH, and turbidity. Table 3.6–2 lists a number of numeric water quality criteria for three of the state identified uses. The criteria listed were selected based on the potential of being impacted by military activities.

**Table 3.6–2**
**Surface Water Quality Standards for the State of Louisiana**

| Parameter | Units | Freshwater Acute | Freshwater Chronic | General Water Quality Criteria | Surface Water to be used as Drinking Water Supply |
|---|---|---|---|---|---|
| Water Temperature (maximum) | ℃ | | | 32 | 32 |
| Dissolved Oxygen | mg/L | | | >5 | 5 |
| $BOD_5$[1] | mg/L | | | | |
| PH | SU | | | 6 to 8.5 | 6 to 8.5 |
| Turbidity[2] | Hach FTU | | | 25 to 150 | |
| Chloride | mg/L | | | 20 | |
| $SO_4$ | mg/L | | | 20 | |
| Nitrogen, total | mg/L | | | | 4 |
| Arsenic, total | µg/L | 339.8 | 150 | | 50 |
| Cadmium[3,4] | µg/L | 15 | 0.62 | | 10 |
| Chromium III[3,4] | µg/L | 310 | 103 | | 50 |
| Chromium VI | µg/L | 16 | 11 | | 50 |
| Copper[3,4] | µg/L | 10 | 7.0 | | 1.0 (mg/L) |
| Lead[3,4] | µg/L | 30 | 1.2 | | 50 |
| Zinc[3,4] | µg/L | 64 | 58 | | 5.0 (mg/L) |
| Mercury[4] | µg/L | 2.04 | 0.012 | | 2 |
| Fecal coliform bacteria (Pathogens)[5] | #/100 mL | | | 200/400 | [5] |

Source: LDEQ, 2002d.

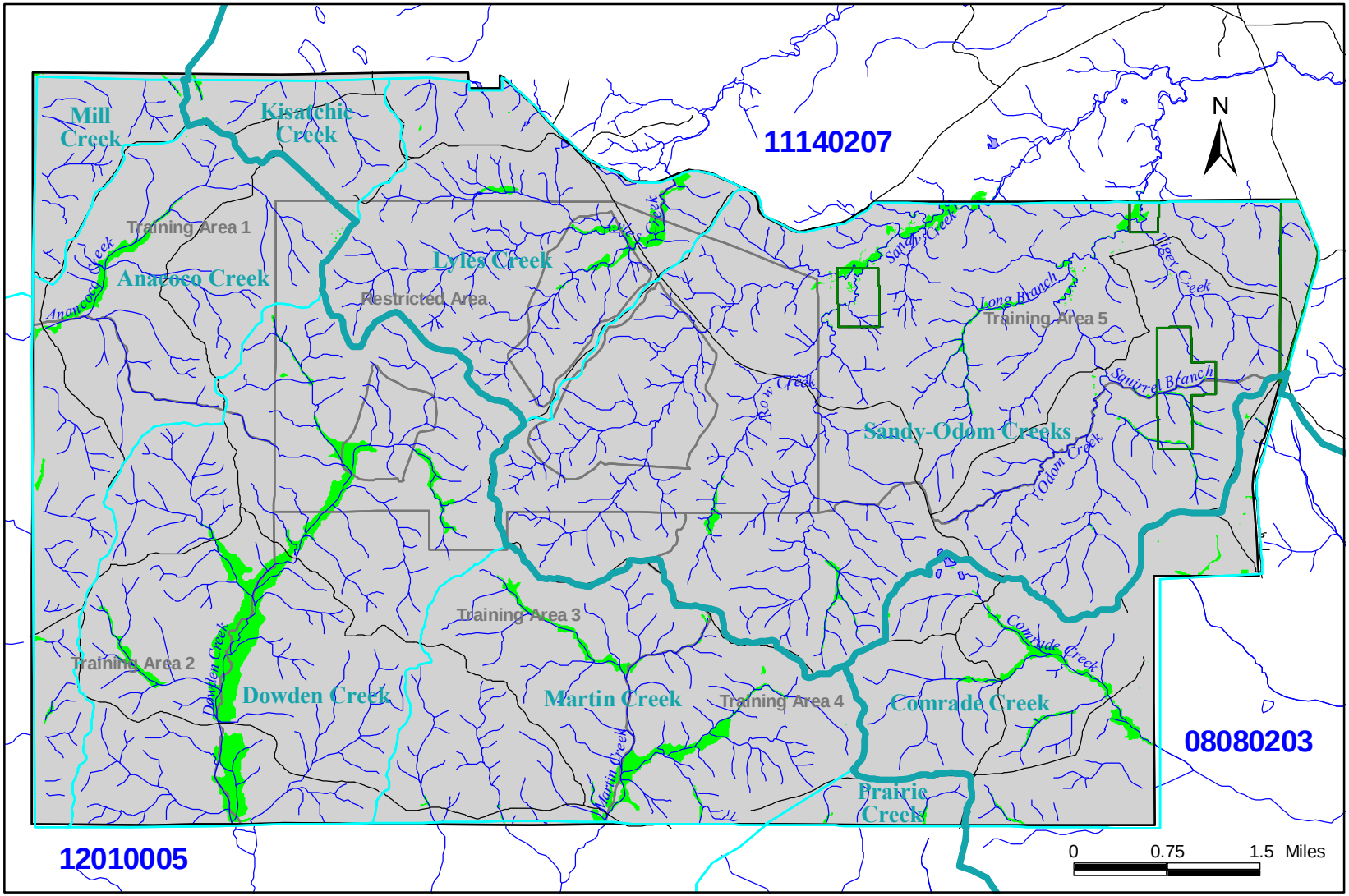
[1] Five-day biochemical oxygen demand.

[2] Turbidity varies by watershed: Red River, 150 NTU, Sabine and Calcasieu 50 NTU, Scenic Rivers 25 NTU.

[3] Hardness-dependent criteria for fresh water. These values are for hardness value of 50 mg/L $CaCO_3$.

[4] Metals criteria are expressed in terms of dissolved metal in the water column. In years past, water quality criteria were for total metal.

[5] The Louisiana fecal coliform standard for primary contact recreational waters is as follows: "Based on a minimum of not less than five samples taken over not more than a 30-day period, the fecal coliform content shall not exceed a log mean of 200/100mL, nor shall more than 10 percent of the total samples during any 30-day period, or 25 percent of the total samples collected annually, exceed 400/100mL."




**LEGEND**

- Stream
- Watershed Boundary
- Potential Wetland
- Training Area Boundary
- Forest Service Parcel Boundary (to be transferred to Army ownership)

Source: Fort Polk GIS, 2002.

# Surface Water Features

**Figure 3-4**

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***303(d) Listing.*** Section 303(d) of the CWA requires states to identify and develop a list of waterbodies that are impaired where technology-based and other required controls have not provided attainment of water quality standards. The waterbodies listed on the 303(d) list violate the water quality criteria listed in Table 3.6–2 or are otherwise deemed impaired by the state. Title 33 does not contain numeric water quality criteria for aluminum or suspended solids but they are included as a parameter on the 303(d) list. Section 305(b) of the CWA requires states to assess and report the quality of their waterbodies. Beginning in 2002, Louisiana combined their 303(d) list and their 305(b) report into one report commonly referred to as the Integrated Report following USEPA's consolidated assessment and listing methodology. According to the 2002 Integrated Report, Bayou Kisatchie, from where it enters the Kisatchie National Forest to its confluence with Old River, is listed for cadmium, copper, lead, mercury, siltation, turbidity, pathogens, organic enrichment, and low dissolved oxygen. The river is identified as partially supporting its overall designated uses. Although Bayou Kisatchie is not located within the Peason Ridge area, it receives water from several creeks originating in Peason Ridge including Odom, Lyles, and Little Sandy Creeks.

***Scenic River Designation.*** Louisiana's Natural and Scenic River System was established by the Louisiana Scenic River Act of 1988 to preserve, reclaim, and enhance the wilderness quality, scenic beauty and ecological regime of certain free-flowing streams or stream segments. The act regulates activities that have a direct, measurable effect on designated scenic waters, or that occur within a 100-foot riparian zone along the stream bank. Point source discharges to tributaries or activities may not cause a measurable adverse impact at the confluence with a designated scenic stream.

Table 3.6–3 lists the tributaries flowing out of Peason Ridge to scenic rivers downstream.

**Table 3.6–3**
**Scenic River Segments**

| Creek Name | Location | Scenic Segment Number or Description | Flows to Scenic River |
|---|---|---|---|
| Odom, Lyles, and Little Sandy Creeks | Red River Basin | 101103 (Kisatchie Creek in Natchitoches Parish from its entrance into Kisatchie National Forest to its entrance into Old River) | Kisatchie Creek |
| Comrade | Calcasieu River Basin | 030120 ( Calcasieu River beginning at Hwy 8 to Rapides/Allen Parishes line) | Calcasieu River |

### *3.6.1.2.2 Potential Pollutant Sources*

Pollutant sources are typically categorized as either point or nonpoint sources under the CWA.

***Point Sources.*** Point sources are defined as any discernable, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft from which pollutants are or may be discharged. The National Pollutant Discharge Elimination System (NPDES) Program, under The CWA sections 318, 402, and 405, require permits for the discharge of pollutants from point sources. There are several types of permits under the NPDES permit program: effluent from facilities, municipal wastewater

treatment plants, stormwater from construction sites, and municipal separate storm sewer systems.

One point source discharge facility was identified in close proximity of the Peason Ridge training area. Table 3.6–4 presents the identification number, location, and design flow for the water pollution control plant. This Army owned and operated plant is a permitted lagoon system that discharges to Baygall Branch, located in the Calcasieu River Basin.

**Table 3.6–4**
**Water Pollution Control Plant Discharge Locations**

| Identification Number | Name | Permit Limits (y/n) | Design Flow (MGD) |
|---|---|---|---|
| G550200 | Peason Ridge Sanitary Sewage Treatment Facility | y | 0.0024 |

Source: USEPA, 2002a.

No other discharge facilities were identified within close proximity of Peason Ridge.

In 1987 Congress amended the CWA to require USEPA to establish a phased NPDES permit system for stormwater discharges. The Storm Water Phase I Final Rule, promulgated in 1990 under the CWA, required NPDES stormwater discharge permits for (1) 11 categories of industrial stormwater discharges, (2) large construction activities that disturb more than 5 acres, and (3) stormwater discharges from "medium" and "large" municipal separate storm sewer systems (MS4s). An MS4 is broadly defined to be a conveyance system (including roads, curbs, gutters, ditches, and storm drains) that is owned or operated by a public body, is designed to carry stormwater, is not a combined sewer, and is not part of a publicly owned treatment works. The Storm Water Phase II Final Rule, promulgated in 1999 under the CWA, expanded the NPDES Storm Water program to require stormwater discharge permits for (1) small construction activities disturbing between 1 and 5 acres of land, and (2) small MS4s located in urbanized areas. State and federal facilities, including military bases, which were exempted under the Phase I program.

Under Phase II a stormwater management program must be developed that includes USEPA's six minimum control measures of (1) public outreach/education, (2) public participation/ involvement, (3) illicit discharge detection and elimination, (4) construction site runoff control, (5) postconstruction runoff control, and (6) pollution prevention/good housekeeping. The stormwater management program should include measurable goals for the program and ways to test the effectiveness of the BMPs chosen for the six minimum control measures. The 11 categories of industrial activities include (1) facilities with effluent limitations; (2) manufacturing; (3) mineral, metal, oil and grease; (4) hazardous waste, treatment, or disposal facility; (5) landfills; (6) recycling facilities; (7) steam electric plants; (8) transportation facilities; (9) treatment works; (10) construction activities; and (11) light industrial activity. Industrial facilities requiring an NPDES Industrial Activities Storm Water permit must also develop Storm Water Pollution Prevention Plans (SWPPPs) to minimize the discharge of pollutants through stormwater runoff from the site through the use of best management practices (BMPs).

In addition to the various stormwater permits, Fort Polk has established programs and procedures to minimize soil erosion on all military land. JRTC and Fort Polk maintain a comprehensive watershed based management plan as part of the overall Environmental Management Plan, implemented through the Resource Management Plan, and as part of the SPCCP and Storm water Management Programs. (NRCS, 1999, Freeze and Nichols, Inc, 1998). Watershed management Plans focus heavily on upland controls to limit sediment yields, reduce runoff, and return

rill/sheet erosion into non-destructive sheet flow. These programs apply to all lands under jurisdiction of JRTC and Fort Polk. As an example, under the ITAM, training areas are inspected following a rotation to identify sites needing repair. Sites not adequately repaired by rotational units are stabilized by installation personnel to minimize soil displacement. Repair and stabilization methods include contouring, grading, seeding, and fertilization, as needed. These measures help to establish vegetative cover, which combats erosion by absorbing the kinetic energy of raindrops and slowing the rate of runoff (ENRMD, 2001).

In addition to repairing maneuver damage at individual sites, Fort Polk implements large-scale structural erosion control measures. The installation began a practice of installing sediment basins in the late 1980s. A sediment basin is an impoundment usually constructed on the downslope of a hill or at the beginning of a drainageway. These water retention structures are designed to intercept, capture, and filter runoff by reducing water flow velocity and providing a retention time adequate to allow soil particles to settle out before the water exits the impoundment (ENRMD, 2001). Sediment basins have been installed at sites throughout Fort Polk and Peason Ridge.

***Nonpoint Sources***. Nonpoint sources represent contributions from diffuse, nonpermitted sources. There is an exception to this definition. When stormwater collection systems are in place, the runoff becomes regulated as a point source since the runoff is delivered to the receiving waterbody though a conduit. This type of discharge is discussed in the above section. Typically, nonpoint sources are precipitation-driven and occur as overland flow, that carries pollutants often attached to sediment deposits into streams. However, nonpoint sources also include nonprecipitation-driven events such as contributions from groundwater, septic systems, direct deposition of pollutants from wildlife, livestock, or atmospheric fallout, or various training activities. Pollutant delivery is dependent upon soil type, ground slope, vegetation, rainfall intensity, and land use.

The following paragraphs discuss in further detail the two main contributory factors of nonpoint pollution: soil types and land cover.

***Soil Types***. As discussed in Section 3.5.3, soil erosion is a process by which the upper layers of soil move down slope, becoming a water quality issue when delivered to surface water. Repetitive maneuvering of heavy vehicles and other field activities can initiate soil erosion. During rainfall events the disturbed soil is transported through surface water runoff into natural drainage ways that enter into waterbodies. Soil erosion occurs at different rates depending on the slope, gradient, vegetative cover and the characteristics of the soil that is eroding. The Peason Ridge area is characterized by soils ranging from low to high erodibility, primarily due to differences between soil types in soil detachability, infiltration and runoff distribution, and sediment transportability.

***Land Cover***. Watershed land cover distribution is an important factor in the delivery of nonpoint source pollutants such as sediment, nutrients, heavy metals and pathogens through soil erosion. Nonpoint sources may also contribute pollutants to the watershed. Further discussion of land use and land cover is found in Section 3.4.

***Existing or Baseline Nonpoint Conditions***. A quantitative determination of the relative impact of land disturbance activities on water quality within Peason Ridge requires the development of a baseline loading condition for the subwatersheds that can be evaluated in a manner relative to various options. To develop this baseline loading condition, the subwatersheds shown in Figure 3–3 provide soil erosion loads from the Peason Ridge training areas. The Universal Soil Loss Equation (USLE) was used through the application of the ATTACC model to estimate the impact of the training in the watersheds. A more indepth discussion is located in section 3.5.3.

Baseline losses were calculated using the ATTACC model and represent typical annual average loading conditions by land cover and soil type. The predicted loads represent soil that is available for transport but does not equate to in-stream sediment concentrations. The model-identified areas with the greatest potential for erosion and possible stream sedimentation are located in the northern portion of Peason Ridge. Information presented in *The Kisatchie Creek Watershed Resource Management Plan* prepared for Fort Polk by the NRCS validates the ATTACC model predictions. The streams that may benefit the most from additional BMPs include those within the Kisatchie Creek watershed.

#### *3.6.1.2.3 Current In-Stream Water Quality*

The current water quality conditions of the watersheds located on Peason Ridge were determined using available data, Louisiana Water Quality Assessments, and the following published Resource Management Plans prepared for various watersheds between 1999 and 2001: *A Water Quality Study of Streams on JRTC and Fort Polk, Louisiana*, prepared about 1998; and Resource Management Plans prepared for Comrade Creek and Kisatchie Creek Watershed between 1999 and 2001. Data reported in the USEPA STOrage and RETrieval (STORET) database and the USGS NWISWeb database were reviewed to obtain additional water quality data for monitoring stations on Peason Ridge and its tributaries. There is not a consistent set of observed data for metals, organics, or inorganics for stations located within the Army training areas. Most of the data located for these stations are from two samples spread out over the period of 1973 to 1996.

The *Comrade Creek Watershed Resource Management Plan* was completed for the portion of Comrade Creek located on Peason Ridge. The designated uses are primary and secondary contact recreation, propagation of fish and wildlife, and agriculture. At the time the resource management plan was completed, Comrade Creek was meeting its designated uses although suspended sediment and turbidity levels are elevated during storm events.

The *Kisatchie Creek Watershed Resource Management Plan* was completed for the portion of Kisatchie Creek draining the Peason Ridge Training Area of Fort Polk. The designated uses of Kisatchie Creek are primary and secondary contact recreation, and propagation of fish and wildlife. Located downstream of Peason Ridge, a 33-mile segment of Kisatchie Creek, from where it enters into Kisatchie National Forest to its entrance into Old River (segment 101103), is designated a scenic river. At the time the resource management plan was completed, segment 101103 was only partially meeting its uses because of nonpoint sources of pollution, including siltation, and pathogens. The list of pollutants was increased for 2002 to include cadmium, copper, lead, mercury, turbidity, sediment, organic enrichment, pathogens, and low dissolved oxygen. It is noted in the resource management plan that the tributaries originating in the Peason Ridge Training Area of Fort Polk have the potential to affect the water quality of Kisatchie Creek.

#### *3.6.1.2.4 Historic In-Stream Water Quality*

Sample locations from the USEPA STORET database system and the USGS NWISWeb were reviewed for use in a trends analysis. The STORET database includes sampling data collected by federal and state agencies sampling water quality in the watersheds, and the USGS database includes sampling done by the USGS. None of the sample locations were located within or near Peason Ridge and therefore no data were available for trends analysis.

### *3.6.2 Groundwater*

#### *3.6.2.1 Aquifers*

Groundwater is the principal source of drinking water for Natchitoches, Sabine and Vernon Parishes. Unconsolidated sedimentary deposits, which range in age from Pleistocene to Eocene,

are primary sources of groundwater in Vernon Parish. Underlying the installation are Quaternary Age alluvial and terrace aquifers. The alluvial aquifers are shallow and thin and have little water supply potential. The terrace aquifers only have water supply potential in the southern part of the parish (USGS, 1989).

Six Tertiary Age hydrogeologic units (three aquifers and three confining units) of the Fleming Formation are exposed at land surface in Vernon Parish. The following hydrogeologic units (followed by the geologic unit name) make up the Fleming Formation (in descending order) in Vernon Parish:

- The Evangeline aquifer (Blounts Creek member)
- The Castor Creek confining unit (Castor Creek member)
- The Williamson Creek aquifer (Williamson Creek member)
- The Dough Hills confining unit (Dough Hills member)
- The Carnahan Bayou aquifer (Carnahan Bayou member)
- The Lena confining unit (Lena member)

Recharge areas for the Chicot (terrace) aquifer are present in the southeastern portion of Vernon Parish, and along the southeastern corner of Fort Polk. (USGS, 2002). Other permeable units outcrop at the installation. These include, from youngest to oldest, the Alluvial and Terrace deposits, the Blounts Creek (Evangeline aquifer) member deposits, and the Castor Creek member deposits. These outcrops serve as recharge areas for the aquifers. Most of Peason Ridge is directly underlain by Carnahan Bayou aquifer.

The water table at the installation is encountered at depths ranging from the surface to approximately 60 feet below grade. The Williamson Creek and underlying Carnahan Bayou aquifers are the only aquifers developed for water supply within JRTC and Fort Polk. The Castor Creek confining unit is 200 to 400 feet thick and overlies the Williamson Creek aquifer. Also, between the Williamson Creek and Carnahan Bayou aquifers is the Dough Hills confining unit, which is approximately 300 to 400 feet thick. The Lena confining unit, which underlies the Carnahan Bayou aquifer, is 300 to 400 feet thick in the area of Fort Polk (USGS, 1989).

Groundwater recharge to the Williamson Creek and Carnahan Bayou confined aquifers in the Peason Ridge area occurs by infiltration and percolation of rainfall in the recharge zone, as well as vertical leakage from adjacent units in areas where these units outcrop north of the installation. Groundwater flow from the recharge areas is generally to the southeast, perpendicular to the strike and parallel to the dip of the strata. Natural groundwater flow directions and gradients are altered by groundwater pumping that creates cones of depression in the Fort Polk, Leesville, and DeRidder areas. Leesville is located about five miles northwest of Fort Polk, and DeRidder is located in Beauregard Parish, about fifteen miles southwest of Fort Polk (USGS, 1989).

The Evangeline aquifer is the source of groundwater in South Fort Polk, to the public supply wells for the town of Pitkin, which is 5 miles south of the installation, and to domestic wells in the south part of Vernon Parish. The Williamson Creek aquifer is uppermost in North Fort Polk and forms the source of groundwater for public supply wells at the installation and the town of Pickering, and for domestic wells north and west of the installation. The Carnahan Bayou aquifer is also a source of groundwater for domestic wells north and west of installation, as well as public-supply wells at the installation and the towns of Leesville and Simpson (USGS,

### *3.6.2.2 Groundwater Quality*

The Williamson Creek, Carnahan, and Evangeline aquifers support water supply wells in the area of JRTC and Fort Polk. The LDEQ considers all three aquifers to be of very good quality. All were part of an evaluation conducted by LDEQ as part of the regular BMP sampling rotation. A review of the data collected at the Williamson Creek aquifer shows that all federal primary drinking water standards were met. The standard for pH was the only secondary drinking water standard that was exceeded. No volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, or polychlorinated biphenyls (PCBs) were found. Chemical testing for the hardness of the groundwater indicates that the groundwater is classified as soft. A comparison of the current data averages with historical averages indicates an increase in barium of 82.2 parts per billion (ppb), and a decrease in copper from 10.76 ppb to below its quantifiable limit. Decreases are also observed in nickel (from 11.36 ppb), zinc (by 101.94 ppb), and iron (by 375.71 ppb) (LDEQ, 2002a).

A review of the data collected from the Carnahan aquifer indicates that none of the seven wells sampled exceeded a federal primary standard. The federal secondary drinking water standards for iron and color were not met in certain wells, but no other secondary standard was exceeded. No VOCs, SVOCs, pesticides, or PCBs were detected. Chemical testing for the hardness of the groundwater indicates that the groundwater is classified as moderately hard. A comparison of the current data averages with historical averages shows that barium increased by 103.57 ppb, iron decreased by 305.64 ppb, and zinc decreased by 318.49 ppb. The other averages are, for the most part, consistent (LDEQ, 2002b).

A review of the data collected at the Evangeline aquifer shows that all federal primary drinking water standards were met. Federal secondary drinking water standards for total dissolved solids (TDS) and iron were not met in certain wells, but no other secondary standard was exceeded. No VOCs, SVOCs, pesticides, or PCBs weredetected. Chemical testing for the hardness of the groundwater indicates that the groundwater is classified as soft. A comparison of the current data averages with historical averages shows that for the most part the averages are consistent (LDEQ, 2002c). The Castor Creek confining unit could prevent or retard the of downward movement of contaminants towards the Williamson Creek or Carnahan Bayou aquifers if surface or near-surface contamination were to occur.

Potential sources of groundwater degradation on- and off-post are varied and numerous. Examples of actions that could adversely affect groundwater quality in the study area include the following:

- Violation of federal or state discharge permits
- Leaking underground storage tanks (USTs) or oil/water separators (OWS)
- Spillage from sewage, fuels, waste oils, and/or chemicals
- Leaching of explosive constituents from live fire areas

In addition, leachate or percolation, from unlined or poorly capped old landfills or impact areas could potentially degrade groundwater quality conditions. Studies are currently being conducted to determine if underground water supplies could be threatened by the old Mill Creek landfill or from munition residuals (Morgan Consultants, Inc., 1996).

### *3.6.2.3 Groundwater Use*

As noted above, groundwater in the area of JRTC and Fort Polk exists in the formations under static and artesian conditions. Recent alluvial depositions along streams may be used as sources of water during field exercises and maneuvers, or as water sources for homes, as has been done in

various locations near JRTC and Fort Polk. Dipping geologic formations or members of formations are the primary sources of groundwater in the JRTC and Fort Polk area (Morgan Consultants, Inc., 1996).

The uppermost water-bearing unit at Fort Polk is not sufficiently permeable to transmit water from a well at a maximum sustainable yield of 800 gallons per day (gpd) (4 persons/household * 100 gpd * peak factor of 2). Presently, 16 water supply wells operate at JRTC and Fort Polk. One of these wells is completed in the Carnahan Bayou aquifer, 13 wells are completed in the Williamson Creek aquifer, and 2 off-site wells are completed in the Evangeline aquifer. Wells completed in the Carnahan Bayou aquifer and Williamson Creek aquifer are protected by the Castor Creek confining unit that could prevent or retard the movement of any contaminants (should any contamination occur).

In Louisiana, groundwater is classified into three classifications. Classification 1 includes public water supplies (Class 1A) and potential public water supplies (Class 1B). The yield should exceed 4,800 gallons per day (g/d) and have a total dissolved solids (TDS) of less than 1,000 milligrams per liter (mg/l). Classification 2 includes domestic water supplies that yield greater than 800 g/d but less than 4,800 g/d with TDS of less than 10,000 mg/l. Class 2A includes current domestic supplies; Class 2B includes potential domestic water supplies with TDS less than 1,000 mg/l; and Class 2C includes potential domestic water supplies with TDS greater than 1,000 mg/l but less than 10,000 mg/l. Classification 3 includes sources that are not considered a potential public or domestic water supply. Class 3A includes those sources with yields less than 800 g/d, and Class 3B includes those sources with TDS exceeding 10,000 mg/l (LA DEQ. 2000).The groundwater classification for the water supply wells screened in the Williamson Creek and Carnahan aquifers is considered 3A (Radian International, 2000). The groundwater classification for the two water supply wells screened in the Evangeline aquifer is considered 1 since there is the potential for the uppermost aquifer to be hydraulically connected to the Evangeline aquifer (Radian International, 2000).

Groundwater may discharge into surface streams, ponds, wetlands, or as artesian springs. The discharge may be seasonal, and is affected by historical rainfall, recharge rates, soil moisture and other hydrologic factors. With discharge of groundwater into surface systems, there is a potential pathway for contaminated groundwater to be made available to biological resources. The exposure could occur as uptake into vegetation, uptake by various aquatic organisms, or water available for direct intake by terrestrial animals. In many cases the groundwater would be mixed with water from other surface sources, so the water quality results from a variety of sources. In some areas, these same surface systems provide recharge back into surficial aquifers.

#### *3.6.2.4 Munitions, Unexploded Ordnance, and Explosive Constituent Contamination*

Military training at Folk Polk involves the use of a number of different weapons systems and munitions. Chemical compounds used in these systems may be released during training activities, and groundwater resources at Fort Polk may be affected as a result. The chemicals in munitions are used for propulsion, fuzing, detonation, explosive effects, smoke, marker dyes, or other training-related reasons. Should the munitions detonate as designed, residual chemicals, or new chemical products created during the detonation may be deposited within the impact area. Should the training round malfunction, residual chemicals, including the potential for larger mass of bulk chemicals, may end up in direct contact with soils and biological systems near the impact area, and may leach into groundwater.

The average person thinks of classic artillery projectiles or small arms (rifles) as military munitions. In practice, the term “military munitions” includes a number of components, many of which have been used at Fort Polk. A variety of munitions are used during the training of

infantry, artillery, mobile units, counterterrorism, military police, and special operations units, each with its unique characteristics and potential impacts to the environment. The universe of military munitions includes propellants, explosives, pyrotechnics, bulk chemical warfare and riot control agents, smokes, incendiaries, warheads, cluster munitions and dispensers, depth and demolition charges, and product examples, including rockets, guided and ballistic missiles, bombs, mines, grenades, mortar rounds, artillery and small arms ammunition, torpedoes, and chemical munitions (DoD, 1996). Virtually all contain compounds that are used to achieve the tactical effect of the system.

Projectiles may be filled with energetic compounds that explode the casing. Some are designed to deploy chemicals that produce colored smoke, light, or generate obscurant fogs allowing the movement of troops under the cover of the fog.

Certain types of weapon systems utilize separate propellant and projectile components. The propellant or "powder bags" consists of compounds designed to produce energy sufficient to expel the projectile from the gun tube. Man-portable rockets use propellant compounds for firing, combined with an explosive-filled warhead.

Fuzes and primers are used in larger guns such as howitzers, cannons, and artillery pieces. Fuzes are devices that contain energetic chemicals that begin the detonation chain of the round. The fuze may ignite a primer compound that initiates detonation of the filler compound. Training rounds have chemicals that produce a smoke or sound report without a projectile.

Small arms include all rounds that are cartridges of 30 mm or less in diameter and are used in hand-held or mounted weapons. Small arms cartridges use bullets that are generally solid metal alloys of varying compositions including lead, antimony, barium, chrome, and other metals. The primer ignites the propellant in the cartridge to generate sufficient force to expel the bullet from the rifle tube. Blank rounds contain compounds to create a sound report upon firing, but have no bullet. Tracer rounds are coated with chemicals that produce a visual signal of the trajectory, and in some live fire exercises form a small percentage of the bullets in a clip.

Smoke munitions are used to obscure military activities or to blind the enemy. Smoke can mask movements on a battlefield, or obscure the battlefield with a cloud of chemical agents. Dyes are used to produce colored smokes or for marking, and are generally organic or inorganic salts. Smokes and dyes may be dispersed from cylinders on aircraft or from bursting-type munitions such as mortars, artillery rounds, bombs, grenades, and rockets.

Pyrotechnics are used for illumination, signaling, and simulation of battle noises and effects. They function by the use of an ignition train, i.e., a fuze or a primary charge. In most cases, the pyrotechnic is designed to burn for an extended period, and may present an environmental problem as either unexploded ordnance (UXO) or contamination from partially burned rounds. Pyrotechnics are launched through mechanical pistols or projectors, grenades (either hand-held or rifle), or other hand-held launchers. White phosphorus is a particular type of pyrotechnic used in military training.

Munitions in the Ammunition Supply Point are stored in accordance with Army regulations. Powder bags are stored in sealed containers, bulk explosive in approved blast proof chambers, and munitions are stored on racks and pallets. As a result, properly stored munitions do not release explosive constituents.

Fires on ranges, though not common, may occur as a result of ignition from an ordnance source or from controlled burns of vegetation. The effect of fire on residual explosive constituents inside low order rounds is not quantified.

Over the years, military munitions have been used at Fort Polk for training through a variety of weapon systems. These include air-to-ground munitions deployed from airplanes and helicopters, ground-to-ground direct fire systems, ground-to-ground indirect fire systems, and from man-portable and vehicle-based firing systems. Table 2-6 shows an inventory of training activities used at Fort Polk. These activities include small arms firing, tank gunnery, artillery firing, aerial gunnery, artillery impact and detonation, and engineering and ordnance demolition training. Although research is ongoing (Jenkins, 2001), depending upon the munition, a successful artillery detonation (deflagration) may release small amounts of explosive constituents, and in the process of combustion will produce by-products from the constituents. Depending upon the chemical, over time, these small amounts may accumulate in surface soils.

The training of engineering units requires the detonation of bulk explosives and shaped charges. Explosive Ordnance Disposal (EOD) units routinely detonate UXO during clearance activities, as detonation in place ("blow in place") presents significantly less risk than moving UXO of unknown stability. EOD and engineering units may also destroy off-specification munitions at permitted open-burning, open-detonation (OB-OD) sites. In the past, it was common for artillery training units to set fire to unused portions of propellant bags near the firing positions as the unused portions could not be used again. These four activities may have contributed amounts of explosive constituents at Fort Polk.

Routine sampling and analysis of groundwater is conducted on the wells producing potable water for the post. No primary drinking water standards have been violated (USACE, Fort Worth District, 2002). Groundwater has been monitored in the past in accordance with the OB-OD RCRA Subpart X permit granted to Fort Polk. As discussed in Section 3.6.7.2, groundwater samples taken from various aquifers in the Fort Polk region have not violated any primary drinking water standards. In the most recent round of analytical sampling of six samples from monitoring wells at the Fort Polk EOD Range (December 2002), low values of RDX (6.1 ug/L: 2.0 ug/L) and HMX (1.7 ug/L; 0.44 ug/L) were detected in 2 wells. All other analytes in the EPA 8330 explosives analytical testing were non-detect in all wells (STL. 2003).

Since its inception in 1941, a large number of weapon systems have been utilized at Fort Polk and the composition of propellants, explosive fillers, and signaling chemicals has changed. Over time, soils, vegetation, and wildlife that exist in or traverse through firing range impacts areas at Fort Polk have been exposed to numerous compounds. Current weapon systems utilize a variety of explosive compound formulations. Table 3.6-5 shows seven explosive compositions, the relative percentage of common explosive compounds in each, and a general indication of the use of the compound in existing military munitions.

**Table 3.6–5**
**Composition of Explosive Constituents in Military Munitions**

| | | Explosive Percent (%) | | | | |
|---|---|---|---|---|---|---|
| **Composition** | **Use** | **TNT** | **RDX** | **HMX** | **DNT** | **Others** |
| Composition A | B C D E | | 91-98 | | | |
| Composition B | A D E I | 40 | 60 | | | |
| Cyclotol | A D E H | 25 | 75 | | | |
| HTA-3 | A B | 29 | | 49 | | |
| PBX | | | 0-95 | 0-95 | | |
| Black Powder | J K | | | | | Potassium Nitrate |
| Octols | A E H | | | 25-35 | 70-75 | |

| | | | |
|---|---|---|---|
| A | High energy projectiles | F | Demolition explosives |
| B | Projectile fillers | G | Ammunition Bursting charges |
| C | Boosters | H | Fragmentation charges |
| D | Grenades | I | Igniter powder |
| E | Shaped charges | J | Time fuzes |

The three most commonly used explosive compounds are RDX, HMX, and TNT. Table 3.6-6 shows a listing of other explosive chemicals used in munition systems.

TNT was the primary compound used in weapon systems during World War II. RDX was introduced late in the war to enhance the success in destroying tanks. RDX is approximately 20% more powerful than TNT, and HMX is approximately 15% more powerful than RDX. RDX formulations with plasticizers create munitions that are more stable and less sensitive to physical shock than TNT systems. HMX is more expensive to manufacture and is therefore used in fewer compositions, such as octols and LX-14 shaped charges.

Live fire training is conducted at specific locations on Fort Polk. Depending upon the weapon system used, the munition used, and the training objective, the indirect fire projectile may explode upon impact, after a time delay upon impact, or may detonate prior to impact at a predetermined altitude above the ground surface. The filler material, whether explosive or marking, is initiated within the target zone. Research is ongoing as to the amount (if any) of explosive filler that is deposited on the ground after a successful detonation.

During training, some munitions may not function as designed. Artillery and mortar rounds designed to explode in some manner may fail to detonate at all, or may partially detonate (a low order detonation). Depending upon the firing sequence leading to the creation of a low order round, the resulting ordnance fragment may have ejected unconsumed explosive filler constituents or some may still remain intact within the fragment. Low order rounds may be found on the surface, subsurface, or within the target construction.

The residual explosive constituents may leach into soils, surface runoff, surface waters, and groundwater. At Fort Polk, the surficial aquifers (the Evangeline aquifer) are more likely to receive any migrating explosive constituents.

Constituents of Concern. Current research and public interest are focused on a number of compounds found in military munitions. There is a great deal of research and public interest in RDX, TNT, and perchlorate.

**Table 3.6-6.**
**Explosive Chemicals Commonly Used in Military Munitions**

| |
|---|
| 1,3-Dinitrobenzene |
| 2,6-Dinitrotoluene |
| 2,4-Dinitrotoluene |
| 1,3,5-Trinitrobenzene |
| TNT |
| RDX |
| HMX |
| 4-Amino-2,6-dinitrotoluene |
| 2-Amino-2,4-dinitrotoluene |
| 3,5-Dinitroanaline |
| Nitroglycerin |
| Pentaerythritol tetranitrate (PETN) |
| Nitrotoluene |

RDX is a highly effective explosive compound, and is found in a number of current weapon systems. From a munitions perspective, it provides excellent wartime performance, has desirable explosive characteristics, is stable under training conditions, and can be formulated with other compounds for specific actions. RDX in the environment demonstrates negligible water solubility and does not chemically bind (adsorb) to most soils, however as the clay content of the soil increases, the adsorption increases. In some formulations, pieces of explosive materials containing RDX have been found on ranges to persist as solid entities for years. RDX shows limited volatility into the air. RDX undergoes rapid photolysis into secondary products when exposed to sunlight and air, and can undergo photolysis in shallow water. Chemical degradation takes place more slowly in the soil. Some plants have been shown to uptake RDX, but do not appear to be a major sink for RDX. Given sufficient rainfall, residual nondegraded RDX and secondary products will move rapidly through soils and into groundwater.

Human exposure to RDX may occur via four pathways: drinking contaminated groundwater, ingestion of contaminated soil, direct contact with the compound, and inhalation of particulate RDX resulting from detonations. RDX has not been detected in groundwater samples taken at Fort Polk. Ingestion of soils is not likely as the ranges are isolated from civilian access. EOD specialists may come into direct contact with RDX when handling bulk explosives, UXO, or detonation charges. Exposure to airborne particulate RDX from detonations is possible, though unlikely.

The human toxicity of RDX has been investigated, and results are not unanimous (USCHPPM, 2001). Because of the presence of RDX in the environment and its potential to migrate to groundwater, the health effects of this compound are of great concern to the Army. In 1988, USEPA, in collaboration with the Army, published a Health Advisory (HA) document for RDX. The HA provided a review of the toxicity and health-related information for RDX and recommended safe drinking water levels for various exposure durations. Because of the potential long-term exposure of populations to low concentrations of RDX in drinking water, initial priority was given to the carcinogenic effects.

The USEPA defines the Maximum Contaminant Level (MCL) as the highest level of a contaminant that is allowed in drinking water, and is an enforceable standard. The USEPA has not published an MCL for RDX (EPA, 2002).

TNT is an effective explosive compound, long used in military weapon systems and in civilian commercial activities, such as mining and road construction. TNT is inexpensive to produce, and when used in combination with other compounds to potentiate the explosive energy, generates major explosive damage. It has been in used in the military for decades, and has been employed at Fort Polk since the establishment of the installation. TNT is highly soluble in water, and degrades rapidly into by-products (including 2,4-DNT and 4,6-DNT) in air and water. TNT does not adsorb to most soils, and, with rainfall, moves rapidly through the soil column and into groundwater. TNT does not volatilize into the air.

Human exposure to TNT and its breakdown products may occur via four pathways: drinking contaminated groundwater, ingestion of contaminated soil, direct contact with the compound, and inhalation of particulate TNT resulting from detonations. TNT has not been detected in groundwater samples taken at Fort Polk. Ingestion of soils is not likely as the ranges are isolated from civilian access. EOD specialists may come into direct contact with TNT when handling bulk explosives, UXO, or detonation charges. Exposure to airborne particulate TNT from detonations is possible, though unlikely.

The USEPA has determined that TNT is a possible human carcinogen. This assessment was based on a study in which rats that ate TNT for long periods developed tumors of the urinary

bladder. No data on the effect of TNT on human reproduction or carcinogenic effects have been demonstrated (ATSDR, 1995). The USEPA has not published an MCL for TNT (EPA, 2002).

HMX is not considered a potential contaminant of concern. It is not considered as potentially toxic as other explosives and is less mobile in water and soils. (ATSDR. 1997). Owing to its expense and production requirements, it is used in considerably fewer munitions, and therefore is likely to be found in minimal quantities in and near munition impact areas.

Perchlorate is an oxidizing anion of ammonium, potassium, magnesium, and sodium salts. Ammonium and potassium perchlorate compounds have been used in a variety of munitions and pyrotechnics. Perchlorate is used in primers, fuzes, and as a propellant in man-portable, self-propelled rockets. Due to its high solubility and chemical stability in groundwater, it is highly mobile and persistent. Relative to explosive fillers, only small amounts of perchlorate are found in weapon systems.

Human exposure to perchlorate effectively occurs only through drinking contaminated water. Perchlorate has not been detected in groundwater samples taken at Fort Polk. Inhalation or dermal contact with perchlorate has not been shown to be significant human exposure pathways. The USEPA has not published an MCL for perchlorate (EPA, 2002).

There is no current federal maximum contaminant level (MCL) for perchlorate, however the Unregulated Contaminant Monitoring Rule (UMCR) requires public water systems serving more than 10,000 people and some smaller systems to monitor drinking water for perchlorate. A recently completed Draft Health Risk Assessment will provide the EPA with sufficient data to determine if perchlorate should be regulated in 2006 (Jarabek, 2002).

Other biological systems may be exposed to perchlorate via groundwater migrating to surface systems. Again, long-term impacts from exposure of nonhuman biological systems to perchlorate are being investigated.

The Army has recognized that perchlorate may be a problem at many military installations. DoD recently released a memo allowing DoD activities to investigate for the presence and pathways for perchlorate under DoD Instruction 4711.6, Environmental Compliance (DoD 2002).

## *3.7 BIOLOGICAL RESOURCES*

### *3.7.1 Vegetation*

Fort Polk and Peason Ridge together support 1467 species of plants (Allen, n.d.). About 73 percent (24,169 acres) of Peason Ridge is forested, with the remainder in grassland and shrubland successional stages. Forested land on Peason Ridge is dominated by pine or a mix of hardwood and pine. Dominant pine species found in Peason Ridge forests are longleaf pine (*Pinus palustris*), loblolly pine (*Pinus taeda*), and shortleaf pine (*Pinus echinata*) (U.S. Army and USDA Forest Service, 1998). Little bluestem (*Schizachyrium scoparium*) is a dominant grass in pine forests, and bracken fern (*Pteridium aquilinum*) is also common. In the absence of fire, hardwood species invade pine forests. Hardwood species include blackjack oak (*Quercus marilandica*), southern red oak (*Quercus falcata*), water oak (*Quercus nigra*), sweetgum (*Liquidambar styraciflua*), black hickory (*Carya texana*), sassafras (*Sassafras albidum*), and persimmon (*Diospyros virginiana*). Hardwood species dominate in riparian forests along creeks. Communities called baygalls are found in wet areas in the headwaters of creeks. Baygalls support small trees and shrubs such as swamp black gum (*Nyssa biflora*), sweet bay (*Magnolia virginiana*), red bay (*Persea palustris*), large gallberry (*Ilex coriacea*), and red maple (*Acer rubrum*).

### *3.7.2 Forest Management*

The primary objective of Fort Polk's forest management program is maintenance and restoration of the longleaf pine ecosystem. The installation's Natural Resources Management Branch (NRMB) is responsible for forest management at Peason Ridge in accordance with the Forest Management Plan (Fort Polk, 1991), and the Integrated Natural Resources Management Plan (JRTC and Fort Polk, 1998). Management activities include insect and disease prevention and control, timber production, wildfire suppression, and wildlife habitat enhancement. The primary timber species harvested on Fort Polk is loblolly pine. An average of 552 acres of timber are harvested annually on Peason Ridge (JRTC and Fort Polk, 1998). Selective harvesting, prescribed burning, and other silvicultural practices improve and maintain habitat for a variety of wildlife species including the endangered red-cockaded woodpecker (RCW) (JRTC and Fort Polk, 1998).

Prescribed burns are performed on a 2-year burn cycle for the longleaf pine ecosystem and a 3-year cycle for other upland forest types. Riparian hardwood forests are not subject to prescribed burns (ENRMD, 2001). From 1996 to 2000, an average of 4,167 acres of prescribed burning occurred each year on Peason Ridge (JRTC and Fort Polk, 2001). Wildfire is also responsible for an average of 1,350 acres burned per year. Prescribed burning is conducted year-round at Peason Ridge. Because opportunities for prescribed burning are constrained by military training activities, the installation's training calendar is developed to provide 2 weeks per quarter when prescribed burning and other natural resource management activities take precedence over training. Known as "Green Periods," these 14-day quarterly intervals provide windows of opportunity for prescribed burning and other timber management (ENRMD, 2001). Burning and management can take place outside Green Periods, although it must be scheduled around military training.

The Kisatchie National Forest (KNF) currently owns four inholdings in the northeast corner of Peason Ridge. These inholdings are in Management Area 9E of the Kisatchie Forest Management Plan (KNF, 1999). Management standards and guidelines for Management Area 9E require management of seed-tree and shelterwood to be used as the primary even-aged regeneration method techniques to regenerate all upland forest types. The maximum regeneration opening is 40 acres. No more than 15 percent of all pine management types and no more than 10 percent of all upland hardwood management types in the 0 to 10 age class are allowed. The earliest entry age for regeneration purposes is set at 35 years for pine management types; and 90 years for upland hardwood. The forest management plan calls for the protection and maintenance of basic resource values to limit off-site impacts (KNF, 1999).

### *3.7.3 Wildlife*

Longleaf pine forests, hardwood riparian corridors, and small creeks on Peason Ridge support a wide variety of nesting, roosting, resting, and foraging sites for wildlife. Common mammals include least shrew (*Cryptotis parva*), fulvous harvest mouse (*Reithrodontomys fulvescens*), eastern red bat (*Lasiurus borealis*), eastern fox squirrel (*Sciurus niger*), gray squirrel (*Sciurus carolinensis*), nine-banded armadillo (*Dasypus novemcinctus*), and white-tailed deer (*Odocoileus virginianus*). Migratory and resident birds in Fort Polk and Peason Ridge are Bachman's sparrow (*Aimophila aestivalis*), indigo bunting (*Passerina cyanea)*, blue grosbeak (*Guiraca caerulea)*, brown-headed nuthatch (*Sitta pusilla)*, bobwhite quail (Colinus virginianus), summer tanager (*Piranga rubra*), pine warbler (*Dendroica pinus*), and wild turkey (*Meleagris gallopavo*). Common reptiles and amphibians that have been identified in the area include the tan racer (*Coluber constrictor etheridgeri*), cottonmouth (*Agkistrodon piscivorus*), southern copperhead (*Agkistrodon contortrix contortrix*), corn snake (*Elaphe guttata guttata*), rough green snake (*Opheodrys aestivus*), snapping turtle (*Chelydra serpentina*), green anole (*Anolis carolinensis*),

dwarf salamander (*Eurycea quadridigitata*), and Fowler's toad (*Bufo woodhousii fowleri*). Inhabitants of small streams in the region include blackspot shiner (*Notropis atrocaudalis*), creek chubsucker (*Erimyzon oblongus*), longear sunfish (*L. megalotis*), blackspotted topminnow (*Fundulus olivaceous*), blacktail redhorse (*Moxostoma poecilurum*), redfin shiner (*Lythrurus umbratilis*), blacktail shiner (*Cyprinella venusta*), red spotted sunfish (*Lepomis miniatus*), pirate perch (*Apherododerus sayanus*), and dusky darter (*Percina sciera*). Additional information concerning fish and wildlife at Peason Ridge can be found in the Integrated Natural Resources Management Plan (JRTC and Fort Polk, 1998). Appendix B contains a list of species located within the Forest Service inholdings. Appendix C contains a list of fish and aquatic invertebrate species identified in recent surveys on Peason Ridge.

Land owned by the Army and Forest Service at Peason Ridge is managed in cooperation with the Louisiana Department of Wildlife and Fisheries (LDWF) as the Peason Ridge Wildlife Management Area (JRTC and Fort Polk, 1998). Hunting, trapping, and fishing for most Louisiana game species is permitted on Peason Ridge when it does not conflict with military training. Peason Ridge is frequently closed to outdoor recreation because of safety concerns during live-fire training. In recent years, small game harvest has decreased on Peason Ridge, while deer harvest has remained steady as hunters take advantage of popular short-duration, either-sex deer seasons (Hudson, 2002).

### *3.7.4 Management Indicator Species*

The National Forest Management Act (NFMA) requires each national forest to provide for diversity of plant and animal communities (16 U.S.C. 1604 (g)(3)(B)). Given the landscape-scale approach to forest management adopted for the Forest Plan, changes are expected in the quantity and quality of habitats for some wildlife, fisheries, and botanical resources. To monitor these changes during implementation of the Forest Plan, NFMA regulations (36 CFR 219.19(a)(1)) require selection of Management Indicator Species (MIS) to indicate the effects of management on communities and biological resources. MIS are selected and monitored "because their population changes are believed to indicate the effects of management activities" (36 CFR 291.19(a)(1)).

Two major terrestrial landscape types and two major aquatic habitat types are present on Forest Service inholdings in the northeastern corner of Peason Ridge. Table 3.7–1 lists the MIS potentially occurring in the project area.

### *3.7.5 Sensitive Species*

#### *3.7.5.1 Federally Listed Species*

The RCW (*Picoides borealis*) is the only federally listed endangered species on Peason Ridge. The RCW requires mature, open-canopy, frequently burned longleaf pine forests for nesting, roosting, and foraging habitat. The RCW excavates nesting and roosting cavities in older pine trees because pines of sufficient diameter and adequate heartwood are required to house the cavity chamber (Clark 1993). The Peason Ridge RCW population is a small and potentially genetically isolated population. Dispersal of birds between the Peason Ridge RCW subpopulation and other nearby RCW subpopulations in the KNF appears to be rare. Only two dispersed RCWs have been documented at Peason Ridge in 8 years of intensive monitoring, one originally from the Evangeline Unit, and a second from the Vernon Unit.

**Table 3.7–1**
**MIS Species Occurring or Potentially Occurring on Forest Service Inholdings at Peason Ridge**

| Longleaf Landscape MIS | |
|---|---|
| **Plants** | **Wildlife** |
| Longleaf pine (*Pinus palustris*) | [1]Bachman's sparrow (*Aimophila aestivalis*) |
| Noseburn (*Tragia urticifolia*) | [1]Northern bobwhite quail (*Colinus virginianus*) |
| Pale purple coneflower (*Echinacea pallida*) | [1]Prairie warbler (*Dendroica discolor*) |
| Pinehill bluestem (*Schizachyrium scoparium*) | [2]Red-cockaded woodpecker (*Picoides borealis*) |
| | [1]Red-headed woodpecker (*Melanerpes erythrocephalus*) |
| **Small-Stream Riparian Landscape MIS** | |
| **Plants** | **Wildlife** |
| American beech (*Fagus grandifolia*) | [1]Acadian flycatcher (*Empidonax virescens*) |
| Basswood *Tilia americana*) | [3]Louisiana waterthrush (*Seiurus motacilla*) |
| Cherrybark oak (*Quercus pagoda*) | [1]White-eyed vireo (*Vireo griseus*) |
| Inland sea-oats (*Chasmanthium latifolium*) | [1]Yellow-billed cuckoo (*Coccyzus americanus*) |
| Ironwood (*Carpinus caroliniana*) | |
| Mayapple (*Podophyllum peltatum*) | |
| Wild azalea (*Rhododendron canescens*) | |
| **Aquatic MIS** | |
| **Aquatic Slow-Flowing—Silt/Clay Bottom Habitats** | **Aquatic Swift-Flowing—Sand/Gravel Bottom Habitat** |
| Pirate perch (*Aphredoderus sayanus*) | [4]Brown madtom (*Noturus phaeus*) |
| Blackspotted topminnow (*Fundulus olivaceus*) | [4]Redfin darter (*Etheostoma whipplei*) |
| | [4]Blackspotted topminnow (*Fundulus olivaceus*) |
| | [2,4]Louisiana pearlshell mussel (*Margaratifera hembeli*) |

[1] Known to occur within Forest Service inholdings; [2] Not known to occur within Forest Service inholdings; [3] Potentially occuring within Forest Service inholdings; [4] Stream systems running through the inholdings do not support these species, although these species are known from the watershed.

The Army and KNF are working to better connect RCW populations with habitat corridors (Appendix D contains agency consultation information). The 2002 prebreeding roost check data documented 30 active sites on Peason Ridge, which consisted of 24 potential breeding groups, two solitary groups, and four captured sites (Stephens, 2003). The captured sites are occupied by one or more members of a nearby group and do not represent a distinct breeding unit.

### *3.7.5.2 Rare Species Not Federally Listed*

The Louisiana pine snake (*Pituophis ruthveni*) is proposed for federal listing as a threatened or endangered species and is identified by the Forest Service as a sensitive species. Formerly described as a subspecies (*Pituophis melanoleucus ruthveni*), the Louisiana pine snake was determined to be a valid evolutionary species, both geographically isolated and genetically distinct (Reichling, 1995). It is now accepted as a full species, *Pituophis ruthveni* (Collins, 1997). Louisiana pine snake populations are thought to have declined in recent decades (Reichling, 1995). They are generally associated with open pine forests with an herbaceous understory, and sandy well-drained soils (ENRMD, 2001). Louisiana pine snakes spend most of their lives underground, and are known to hibernate in burrows created by Baird's pocket gopher (*Geomys breviceps*) (Young and Vandeventer, 1988). Most Louisiana pine snake telemetry locations (approximately 90%) have shown snakes immediately adjacent to pocket gopher burrows. Additionally, the Baird's pocket gopher is thought to be the primary prey item of the Louisiana pine snake (Vandeventer and Young, 1989).

Two Louisiana pine snakes were observed and captured crossing gravel roads in the western portion of Peason Ridge military reserve. In June 1997 a Louisiana pine snake was observed and captured by Fort Polk Environmental and Natural Resources Management Division (ENRMD) personnel and later used in a radio-telemetry project from 1997 to 1999. The other Louisiana pine snake was captured by Range maintenance personnel in June 1998 and later released near the same location by ENRMD personnel (ENRMD, 2001).

The Forest Service has identified Sensitive and Conservation wildlife and aquatic species that occur or might occur on the intensive-use Forest Service lands at Fort Polk and Peason Ridge.

Sensitive species are defined as globally rare species, declining in most of their range, although substantial populations might exist on KNF lands. Conservation species are worthy of preservation because they are rare on KNF lands in Louisiana, although stable populations of a conservation species could be abundant elsewhere in North America (Wagner, 2002, personal communication). Table 3.7–2 lists rare wildlife species that could occur within the DMPBAC project footprint.

**Table 3.7–2**
**Forest Service Sensitive and Conservation Wildlife and Aquatic Species Occurring or Potentially Occurring on Forest Service Inholdings at Peason Ridge**

| Species | Status |
|---|---|
| ***Mammals*** | |
| [3]Rafinesque's Big-eared bat (*Corynorhinus rafinesquii*) | Conservation |
| [3]Big Brown Bat (*Eptesicus fuscus*) | Conservation |
| [3]Long-tailed Weasel (*Mustela frenata*) | Conservation |
| [3]Hipsid Pocket Mouse (*Chaetodipus hispidus*) | Conservation |
| ***Birds*** | |
| [1]Bachman's Sparrow (*Aimophilia aestivalis*) | Sensitive |
| [1]Cooper's Hawk (*Accipiter cooperii*) | Conservation |
| [3]Worm-eating Warbler (*Helmitheros vermivorus*) | Conservation |
| [3]Louisiana Waterthrush (*Seiurus motacilla*) | Conservation |
| [3]White-breasted Nuthatch (*Sitta carolinensis*) | Conservation |
| [2]Warbling Vireo (*Vireo gilvus*) | Conservation |
| ***Reptiles and Amphibians*** | |
| [3]Louisiana Pine Snake (*Pituophis ruthveni*) | Sensitive |
| [3]Southern Red-backed Salamander (*Plethodon serratus*) | Conservation |
| [3]Louisiana Slimy Salamander (*Plethodon kisatchie*) | Sensitive |
| ***Fish and Mussels*** | |
| [1,4]Sabine Shiner (*Notropis sabinae*) | Conservation |
| [3,4]Southern Hickorynut (*Obovaria jacksoniana*) | Sensitive |
| [3,4]Southern Creekmussel (*Strophitus subvexus*) | Sensitive |
| ***Invertebrates*** | |
| [1,4]Kisatchie Painted Crawfish (*Oronectes maletae*) | Conservation |

Source: ENRMD, 2001.
[1] Known to occur within Forest Service inholdings; [2] Not known to occur within Forest Service inholdings; [3] Potentially occuring within Forest Service inholdings; [4] Stream systems running through the inholdings do not support these species, although these species are known from the watershed.

There are no federally listed plant species on Peason Ridge. However, as many as 28 plant species listed as Sensitive or Conservation species by the Forest Service could occur on Peason Ridge (Table 3.7–3). The majority of sensitive or conservation species are mostly known only from wetlands and riparian habitats (ENRMD, 2001).

### *3.7.6 Wetlands*

There are 1286 acres of wetlands on Peason Ridge (USGS, 1992). Palustrine-forested wetlands make up 98 percent (1270 acres) of Peason Ridge wetlands, and are most commonly associated with creek drainages. Baygalls are wetlands with dense small tree/shrub vegetation, typically sweet bay and large gallberry, which commonly occur at the headwaters of streams where groundwaters rise to the surface and begin to flow. Further downstream, wetlands adjacent to streams vary from open bottom areas, ponded depressions, or forested bottomlands (e.g., beaver ponds or backwater sloughs). Small, isolated wetlands also occur sporadically in upland forests. Hillside seeps are found on slopes where water tables surface and create reliably moist conditions. Bogs are wet depressions underlain by impermeable soils. Hillside seeps and bogs tend to be open and dominated by grasses, sedges, and pitcher plants. There are 134 acres of potential wetlands in the northeastern corner of Peason Ridge where DMPBAC construction and training is likely to occur.

**Table 3.7–3**
**Forest Service Sensitive and Conservation Plant Species Occurring or Potentially Occurring on Intensive Military Use Lands, Vernon Unit, Calcasieu District, and Kisatchie District of the Kisatchie National Forest**

| Species Name | Status |
|---|---|
| Barbed rattlesnake root *(Prenanthes barbata)* | Sensitive |
| Bearded grass-pink *(Calopogon barbatus)* | Conservation |
| Black snakeroot *(Zigadenus densus)* | Conservation |
| Bog button *(Lachnocaulon digynum)* | Sensitive |
| Broad-leaved Barbara's button's *(Marshallia trinervia)* | Conservation |
| Broornrape *(Orobanche uniflora)* | Conservation |
| Drummond's yellow-eyed grass *(Xyris drummondii)* | Sensitive |
| Harper's yellow-eyed grass *(Xyris scabrifolia)* | Sensitive |
| Kentucky lady's slipper *(Cypripedium kentuckiense)* | Sensitive |
| Large beakrush *(Rhynchospora macra)* | Conservation |
| Large-leaved rose gentian *(Sabatia macrophylla)* | Conservation |
| Long-leaved wild buckwheat *(Eriogonum longifolium)* | Conservation |
| Louisiana bluestar *(Amosonia ludoviciana)* | Sensitive |
| Louisiana squarehead *(Tetragonotheca ludoviciana)* | Conservation |
| Mohlenbrock's umbrella sedge *(Cyperus grayioides)* | Sensitive |
| Northern burmannia *(Burmannia biflora)* | Conservation |
| Oklahoma grass-pink *(Calopogon oklahomensis)* | Conservation |
| Riddell's spikemoss *(Selaginella arenicola* var. *riddellii)* | Conservation |
| Sabine coneflower *(Rudbeckia scabrifolia)* | Sensitive |
| Slender gay-feather *(Liatris tenuis)* | Sensitive |
| Slender heliotrope *(Heliotropium tenellum)* | Conservation |
| Slender wake-robin *(Trillium gracile)* | Conservation |
| Strong sedge *(Carex tenax)* | Conservation |
| Viperina *(Zornia bracteate)* | Conservation |
| White-fringed orchid *(Platanthera blephartiglottis)* | Conservation |
| Wild geranium *(Geranium maculatum)* | Conservation |
| Yellow fringeless orchid *(Platanthera integra)* | Conservation |
| Yellowroot *(Xanthorhiza simplicissima)* | Conservation |

Source: ENRMD, 2001.

## 3.8 CULTURAL RESOURCES

### 3.8.1 Prehistoric and Historic Background

The Fort Polk Historic Preservation Plan (Anderson et al., 1999) can be consulted for a detailed description of the prehistoric and historic background of the project area.

### 3.8.2 Status of Cultural Resource Inventories and Section 106 Consultations

Cultural resources at Fort Polk date from the earliest human occupation of the New World (the Paleo-Indian Period) to the 20th century. Archaeological excavations and surveys, including large-scale surveys, site testing, and data recovery mitigation excavations, have been conducted within the installation's boundaries since 1972 (Campbell et al., 2001). All of Peason Ridge, the site of the proposed action, has been surveyed except for the impact area, to which access is restricted because of the danger of unexploded ordnance. A total of 505 archaeological sites has been identified at Peason Ridge (Anderson et al., 1999; Fort Polk GIS, 2002; Grafton, 2002, personal communication). Of these, 37 are considered eligible for listing on the National Register of Historic Places (NRHP) (Grafton, 2002, personal communication). All sites requiring protection are marked with reflective posts that indicate, "do not drive/do not dig." All troops also have an environmental compliance officer who is trained to recognize these posts and understands that there are penalties for noncompliance (Basham-Wagner, personal communication, 2003).

In addition to the archaeological sites at the JRTC and Fort Polk, there are historic cemeteries, which receive different treatment and maintenance from the archaeological sites. There are two historic cemeteries in the southwest portion of Peason Ridge. They are not located within the footprint of the proposed action. There are no historic buildings at the JRTC and Fort Polk (Page, 2001).

Fort Polk has a large deposit of Miocene Epoch fossils that date to circa 14 million years ago (JRTC and Fort Polk, 1998; Schiebout and Dooley, n.d.). The Miocene beds are located in a swath that runs east-west across Fort Polk in the Miocene Upper Fleming Formation. The Miocene beds do not fall within Peason Ridge. These resources are protected under the same guidance as the cultural resources, which is the Fort Polk Historic Preservation Plan.

Archaeological surveys have been completed for Peason Ridge including all areas of the proposed DMPBAC footprint, i.e., Peason Ridge except for restricted areas. Table 3.8–1 lists 13 sites within the proposed project footprint at Peason Ridge considered eligible for NRHP listing. (Additional sites are located within the footprint, but they are identified as not eligible for listing on the NRHP.) Of the 13 sites, 11 are located outside the eastern portion of Peason Ridge, where most of the proposed activities will take place. Two sites, 16NA0271 and 16NA0215, are within the main portion of the project area. Individual site locations are not identified in this document to preclude possible vandalism or theft.

A total of 47 non-NRHP eligible sites are located within forested portions of the project area proposed for thinning or clearing. Site 16NA0215 is located 150 feet from the proposed forest thinning area.

Two NRHP-eligible sites, 16NA0271 and 16NA0215, are near the proposed "Shoot House" facility. Site 16NA0271 is located approximately 150 feet from the proposed facility, and Site 16NA0215 is located approximately 450 feet from the facility.

**Table 3.8–1**
**NRHP-Eligible Archaeological Sites in Peason Ridge**

| Sites | Status | Posted |
|---|---|---|
| 16NA0271 | Eligible | Yes |
| 16NA0215 | Eligible | Yes |
| 16NA0266 | Eligible | Yes |
| 16NA0277 | Eligible | Yes |
| 16NA0278 | Eligible | Yes |
| 16NA0275 | Eligible | Yes |
| 16NA0265/16NA0274 | Eligible | Yes |
| 16NA0569 | Eligible | Yes |
| 16VN0204 | Eligible | Yes |
| 16VN2515 | Eligible | Yes |
| 16VN0265/16VN0274 | Eligible | Yes |
| 16VN0267/16VN0471 | Eligible | Yes |
| 16VN0268/16VN0269 | Eligible | Yes |

Source: Fort Polk GIS, 2002; Polyengineering, Inc., 2002; National Park Service, 1999.

Two archaeological sites identified as eligible for listing on the NRHP are located near proposed road construction projects. Site 16NA0569 is approximately 100 feet north of an existing road that is proposed to be upgraded. Site 16VN0268/0269 is approximately 800 feet west of a proposed new road.

A Historic Preservation Plan (HPP) for Fort Polk was completed in 1988 (Anderson et al., 1988). The plan synthesized existing data and outlined a management plan for the installation. The plan was updated and augmented in 1999 (Anderson et al., 1999).

"A Good Home for a Poor Man" (Smith, 1999) was published by the National Park Service for Fort Polk, documenting the history of the Fort Polk area and Vernon Parish as part of the Legacy Resource Management Program (Smith, 1999).

A Programmatic Agreement (PA) has been executed among Headquarters, the JRTC and Fort Polk, Forest Service, the Louisiana State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation (1996). The purpose of the agreement is to stipulate the measures that the Army will carry out to comply with the requirements of Section 106 of the National Historic Preservation Act (NHPA). These measures include staffing, planning, and project review. The PA stipulates that all undertakings at Fort Polk on Army-owned land are to be carried out in accordance with the 1988 HPP. The PA also states that all undertakings at Fort Polk on land administered by the Forest Service must be carried out in accordance with the Special Use Permit (SUP) for the installation signed between the Army and the Forest Service in 1992.

A Comprehensive Agreement (CA) has been executed between Fort Polk and the Caddo Nation regarding inadvertent discovery and intentional excavation of human remains and cultural items over which the Caddo Nation might have priority of custody.

Consultation with the Louisiana SHPO for this proposed action is underway.

### *3.8.3 Native American Resources*

To date, apart from the prehistoric archaeological resources described in Section 3.8.2, no resources of Native American interest have been found in the project area. Consultation with the Caddo Nation has been underway to comply with the Native American Graves Protection and Repatriation Act (NAGPRA), and the Caddo Nation and the Army have signed a CA, as described above. As part of the CA, Fort Polk schedules annual meetings with the appropriate tribal representatives of the Caddo Nation to discuss cultural resources. In addition, the Chitimacha Tribe of Louisiana has requested that the Army avoid and protect traditional cultural properties when at all possible. The tribe has requested that they be notified if traditional cultural properties are discovered in areas that might be needed for training so that formal consultation can be conducted. Consultation on the proposed action is underway with the Chitimacha Tribe of Louisiana and the Caddo Tribe of Oklahoma.

## *3.9 NOISE*

The terms *noise* and *sound* are often used interchangeably. The sensation of sound is produced when pressure variations having a certain range of characteristics reach a responsive ear. *Sound* is the term describing pressure variations that are pleasant or useful for communication. *Noise* is generally defined as unwanted sound, often made up of different frequency components.

Noise is among the most pervasive pollutants today. Unwanted sounds from road traffic, jet planes, garbage trucks, construction equipment, manufacturing processes, lawn mowers, leaf blowers, and chain saws, to name a few sources, are among the noise routinely broadcast into the air. Noise negatively affects the health and well-being of both humans and wildlife in many ways (NPC, 2001). Responses to noise vary, depending on the type and characteristics of the noise, expected level of noise, distance between the noise source and the receptor, the receptor's sensitivity, and the time of day. The most conspicuous problems related to noise are hearing loss, and hearing impairment due to masking. Other health impacts include stress and exacerbation of mental health problems; high blood pressure and ischemic heart disease; sleep loss, distraction, and loss of productivity; and a general reduction in the quality of life and opportunities for tranquility. Noise can provoke annoyance responses and changes in social behavior. The effects of noise can be immediate or latent due to long-term exposure (Plog, 1993; USEPA, 1974; Berglund et al, 1995).

Sources of noise that have the potential to affect wildlife include aircraft over-flights; recreational activities like motorboating and snowmobiling; domestic sources such as leaf blowers, lawnmowers, and chainsaws; automobile traffic; and heavy machinery and equipment. Responses vary among species of wildlife, as well as among individuals of a particular species (Busnel and Fletcher, 1978 cited in Radle, n.d.) although the problems are similar to those found in humans. Increased noise levels mask sounds used by wildlife for communication; for example, they mask the squeaking of babies that parents use to locate their young, or the calls used to locate a mate (Dooling, and.; Schubert and Smith, 2000). Disturbed mammals sometimes trot short distances; birds might walk around flapping their wings. Panic and escape behavior results from more severe disturbances. Behavioral and physiological responses include movement away from the noise source, decreased food intake, habitat avoidance and abandonment, and reproductive losses (National Park Service, 1994; Nature Sounds Society, 2001).

One significant response to noise is annoyance. A person's expectation of a sound level associated with an activity has a direct bearing on the level of annoyance. For example, noise is tolerated at a bowling alley, but not at a library. The annoyance might be personal or experienced as a group. The five factors identified as indicators for estimating community complaint reaction to noise are type of noise, amount of repetition, type of neighborhood, time of day, and amount of previous exposure.

Sound levels, reported in decibels (dB), are used to summarize how people hear sound and to determine the impact of noise on public health and welfare. Table 3.9–1 presents a

**Table 3.9–1**
**Sounds Levels of Various Sources**

| Source | Sound Level (dB) |
|---|---|
| Shotgun discharge | 170 |
| Rifle discharge | 163 |
| Artillery fire at 500 feet | 150 |
| Near jet plane at takeoff | 140 |
| Gun muzzle blast | 140 |
| Stock car races | 130 |
| Threshold of pain | 120 |
| Chainsaw | 120 |
| Loud rock music | 115 |
| Car horn | 115 |
| Thunder | 110 |
| Factory machinery | 100 |
| Motorcycle | 100 |
| Lawn mower at 50 feet | 90 |
| Pop-up toaster | 75 |
| Alarm clock | 75 |
| Normal conversation | 60 |
| Rainfall | 50 |
| Light traffic | 50 |
| Refrigerator | 40 |
| Rustle of leaves | 20 |
| Normal breathing | 10 |
| Threshold of hearing | 0 |

Sources: Bearden, 2000; USEPA, 1974.

range of sound levels by various sources of noise. Four different noise-weighting descriptors are used to equate noise impacts on the human ear. The first, Equivalent Sound Level (LEQ), is used to describe a time-varying noise energy as a steady noise level. A-weighted Day-Night Level (ADNL) is used to evaluate human response or annoyance to transportation (aircraft and ground transport) noise. C-weighted Day-Night Level (CDNL) is used to evaluate human response or annoyance to blast (large-caliber fire and explosives). Vibration is an element of impulse noise in accordance with AR 200-1. Finally, linear decibel (dBP) is used to evaluate human response to small arms fire.

USEPA, the federal agency charged with enforcement of the Noise Control Act, recommends the use of the day-night sound level for environmental noise to quantify the intrusiveness of nighttime noise where A-weighted sound level is used for industrial situations. The day-night sound level is the A-weighted equivalent sound level for a 24-hour period with an additional 10-dB weighting imposed on the equivalent sound level occurring during the nighttime hours (10 p.m. to 7 a.m.). These sound levels represent an annual average exposure; on any given day the level might be greater. Table 3.9–2 presents examples of outdoor day-night average (DNL) sound levels in dB measured at various locations.

**Table 3.9–2**
**Examples of Outdoor Day-Night Average Sound Levels**

| Outdoor Location | Sound Level (DNL) in dB |
|---|---|
| Apartment next to freeway | 88 |
| 0.75 mile from touchdown location at major airport | 86 |
| Urban high-density apartment | 83 |
| Urban row housing on major avenue | 69 |
| Old urban residential area | 59 |
| Wood residential | 51 |
| Agricultural cropland | 45 |
| Rural residential | 40 |
| Wilderness background noise | 35 |

Source: USEPA, 1974.

The Noise Control Act of 1972 (Public Law 92-574) and several other laws require the federal government to set and enforce uniform noise control standards for aircraft and airports, interstate motor carriers and railroads, workplace activities, medium- and heavy-duty trucks, motorcycles, portable air compressors, and federally assisted housing projects in noise-exposed areas. The control of environmental or community noise is left to state and local agencies. In 1999 the state of Louisiana added a noise regulation to the Louisiana Air Control Law. This regulation must be consistent with applicable federal laws, rules, and regulations and, at a minimum, provide for criteria and standards for noise control and abatement (U.S. Army, 2000a). Two local governments, Vernon Parish and the city of Alexandria, have current noise laws on the books. Both of these laws fall into the category of "nuisance laws" and have no dB noise limits (U.S. Army, 2000b). Of the four parishes within the military operations areas of Fort Polk, Natchitoches has a zoning commission and Rapides has a planning commission. These commissions do not regulate noise issues, but they do regulate growth and land use.

The Federal Interagency Committee on Urban Noise (FICUN) has developed land use guidelines for areas on or near noise-producing locations and activities such as highways, airports, and firing ranges. The Installation Compatible Use Zone (ICUZ) Program for Fort Polk uses these guidelines (U.S. Army, 2001). The ICUZ program designates noise zones for land use planning. The program considers the land areas that have noise-sensitive land uses and are exposed to generally unacceptable noise levels. Noise-sensitive land uses include, but are not limited to, residences, schools, medical facilities, and churches.

The Army utilizes four noise zones:

- Zone III: incompatible with noise-sensitive land use
- Zone II: normally incompatible with noise-sensitive land use
- Zone I: compatible with noise-sensitive land use
- Busy Day Zone II: compatible with noise-sensitive land use (previously referred to as LUPZ)

These noise zones, the limits, which are voluntary standards or guidance for land use planning, may be used as tools for both noise-abatement planning and noise-complaint management (Table 3.9–3). Zone II is defined by the noise exposure that would be expected to result in more than 15 percent of the population describing themselves as "highly annoyed." Zone III is defined by the exposure resulting in more than 39 percent of the population describing themselves as "highly annoyed." Busy Day Zone II encompasses areas where, during periods of increased operations, community annoyance levels can reach those levels normally associated with Zone II.

**Table 3.9–3.**
**Land Use Planning Guidelines**

| Noise Zone | Percent Population Highly Annoyed | Transportation Noise ADNL in A-weighted dB | Impulsive Noise CDNL in C-weighted dB | Peak Noise in dBP |
|---|---|---|---|---|
| Busy Day | 9–12 | 60-65 | 57–62 | |
| Zone II | | | | |
| Zone I | <15 | <65 | <62 | <87 |
| Zone II | >15 | 65–75 | 62–70 | 87-104 |
| Zone III | >39 | >75 | >70 | >104 |

Source: AR 200-1, 1997 and DA PAM 200-1, Jan 2002.

According to *Environmental Noise Management: An Orientation Handbook for Army Facilities* (U.S. Army, 2001), annoyance continues to accumulate as the number of continuous days of noise exposure increases. It was also noted that once the public has become annoyed, they take longer to forget than it originally took them to become annoyed. The document further states, "Reducing the daily number to 8 (5 dB decrease in noise dose) appeared to have no effect on the downward drift of annoyance. However, tripling the number resulted in a rebound of annoyance from 25% to 60% with a possible 'sensitization' to the standard exposure in the following week." The Army recognizes that there will be periods of higher-than-normal activity and therefore recommends assessing environmental noise using the average busy day as well as the annual average analysis recommended by USEPA. The document further states "these are people who are living in quiet areas but who are disturbed by infrequent events such as a helicopter pilot straying from a Nap of the Earth flight corridor and flying low over the complainant's house or a single large detonation of explosives."

### *3.9.1 Natural Noise Environment*

Fort Polk's noise environment is composed of natural noise created by the inanimate and biological components of nature (wind, rainfall, movement of vegetation, animal activities), man-made noise not associated with military training activities (hunting, logging, vehicular traffic, commercial aircraft), and noise directly attributable to military activities. The existing noise conditions vary greatly from location to location within Fort Polk, all dependent on the ongoing activities. An important feature of the Fort Polk noise environment or soundscape is the extensive amount of mature forest that mitigates the noise levels.

Noise studies conducted by the United States Army Center for Health Protection and Preventive Medicine (USACHPPM) in 1993 and 1994 measured ambient noise levels in various areas within Fort Polk (Table 3.9–4), which can be extrapolated to represent natural background noise for Peason Ridge. A rule of thumb applied by USEPA establishes that ambient noise averages 22 dB with a population density of one person per square mile and increases by approximately 3 dB for each doubling of the number of people per square mile (U.S. Army, 2000b). Using the average population of 175.9 people per square mile, the expected Day-Night Average Sound Level (DNL) for Vernon Parish is 44 dB. Noise measurements show that the ambient sound levels are close to the predicted level.

### *3.9.2 Man-made Noise Environment*

Noise sources at Peason Ridge vary by area and activity. Peason Ridge, which is about 15 miles northwest of the Main Post, falls within three parishes—Vernon, Natchitoches and Sabine. To facilitate the discussion of man-made noise levels, the current noise sources are divided into two categories, military and nonmilitary.

**Table 3.9–4.**
**Ambient Noise Levels around JRTC and Fort Polk**

| Location | LEQ | DNL |
|---|---|---|
| ***Within the JRTC Area of Operations*** | | |
| N side of reservation boundary, near Hick | 50.5 | 55.4 |
| N side of the reservation near Brushy Creek | 52.1 | 58.3 |
| N side of the reservation near Floctaw School | 53.1 | 59.4 |
| S boundary at Kisatchie National Forest | 52.4 | 57.6 |
| Boundary at State Route 463 | 53.1 | 58.8 |
| North side of reservation near Armor Lake | 51.1 | 57.4 |
| ***Within the LUA*** | | |
| Fullerton Millpond, wind at 5 knots | 39.2 | 45.9 |
| Mature pine plantation, wind less than 10 knots | 39.2 | 45.9 |
| Mature mixed pine-hardwood forest, wind 10 knots with gusts to 20 knots | 44.0 | 50.8 |
| Enduro Motorcycle Race campsite, winds 5 knots | 46.3 | 53.1 |

Source: US Army, 2000.

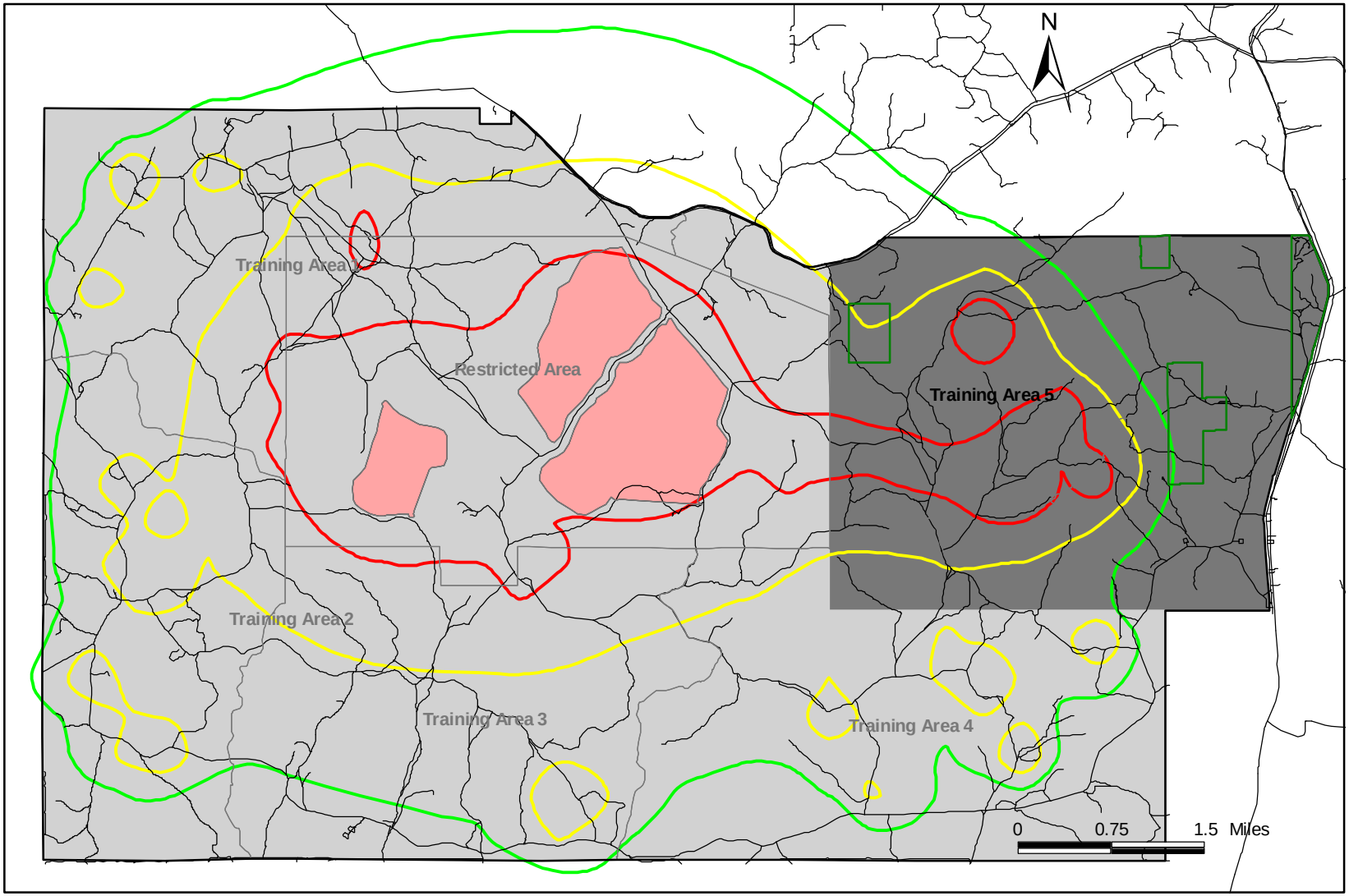
### *3.9.2.1 Military Noise Sources*

***Small Arms, Large Weapons, and Other Explosions***. Peason Ridge is used for live-fire practice. The dedicated impact zone is centrally located, with most of the area committed to live-fire maneuvers. Noise contours specifically for small arms are not needed because of the distance from developed or developable land. The audibility of small arms fire in a forest depends on (1) the caliber of the weapon, (2) the distance from the listener, (3) the direction of fire, and (4) the height of the firing point. Based on these factors, the .50 caliber sniper rifle was considered to have the greatest likelihood of being heard. (U.S. Army, 2000b). The discharge of a .50 caliber rifle was measured to estimate its peak sound level, and it was determined that the peak sound level of that rifle would be 87 dB at 2,000 feet. To assess the level of noise due to the large weapons and other explosions in Peason Ridge, USACHPPM used the BNOISE computer. A year's worth of existing operational data on range firing was used. The Busy Day Zone II extends off the northern boundary.

Houses are present along Louisiana Highway (LA Hwy) 118 to the northeast and the northwest. The Pine Grove Church is just to the northeast of the Busy Day Zone II, and it might experience noise at a Zone II level during periods of high activity or under certain weather conditions. See Figure 3–5.

The low-frequency sound emitted by large weapons and the detonation of explosive charges can cause vibration. Vibration is motion that can best be described in terms of displacement, velocity, and acceleration. Displacement is the distance that a point moves from its current position; velocity represents the instantaneous speed of the movement; and acceleration is how the speed changes. The common descriptor for vibration is velocity expressed in inches per second.

***Helicopters and Aircraft***. The Warrior 1 Special Use Airspace includes Peason Ridge, with a helicopter flight corridor Track 1-A connecting the main fort. The "busy day" DNL for Track 1-A was predicted to be 61.5 dBA at the Multi-Purpose Range Complex (MPRC) and 60 dBA at Helicopter Training Area 1 (HTA1) (U.S. Army, 2000b), which is representative of conditions at Peason Ridge (Table 3.9–5). There are drop zones, used to train troops for quick insertion (typically by helicopter) into the area. Helicopter landing zones can occur anywhere there is a




**LEGEND**

**Decibel Level**

- 57 dB
- 62 dB
- 70 dB

- Area of Proposed DMPBAC
- Existing Road
- Training Area Boundary
- Restricted Area/Impact Area
- Forest Service Parcel Boundary (to be transferred to Army ownership)

# Peason Ridge Noise Contours

Source: USACHPPM, 2003.

**Figure 3-5**

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**Table 3.9–5**
**Aircraft Training Noise around Fort Polk**

| Noise Source | Distance (ft) | Max dBA | ADNL (day/night) |
|---|---|---|---|
| Blackhawk helicopter landing/departure cycle | 150 | 97 | 77.3 /87.3 |
| Chinook helicopter landing/departure cycle | 150 | 95 | 77.3 /87.3 |
| AAA operation activities | 1000 | | 85.9 |
| DZ | 150 | 97 | 77.3/87.3 |
| LZ | 150 | 97 | 77.3/87.3 |
| Area B-1 helicopter flight corridor | | 67.6 | |
| Area B-2 helicopter flight corridor | | 66.4 | |
| Area B-2 helicopter flight corridor | | 65.7 | |

clearing that is large enough to accommodate a helicopter landing and is level and relatively free of ruts. Instantaneous noise levels of approximately 66 dBA occur along the flight corridor Track 1-A.

### *3.9.2.2 Nonmilitary Noise Sources*

There are many sources of nonmilitary noise both on and off the post, such as timber operations, road traffic, off-road motorcycles, all-terrain vehicles (ATVs), recreational shooting, and industrial sources.

***Traffic Noise***. There are federal, state, parish, and private roads throughout the area. LA Hwy 171 is the primary corridor to the west of Peason Ridge, connecting Leesville to Hornbeck. There are many secondary and tertiary roads around the fort, such as Parish Roads 118 to the north and east and 111 to the south. USEPA recommends a noise level of 55 dB ADNL for roads. No data for noise levels along these roadways were located. Traffic along these roadways consists of private passenger vehicles, logging and oil exploration trucks, and military vehicles.

***Timber Operations***. Private landowners and Forest Service and Army natural resources managers carry out timber management activities on the areas in and around Peason Ridge. Noises produced at the sites result from heavy equipment operations such as clearing, shearing, skidding, and loading of timber. Other operations such as use of chainsaws and truck transport of the timber add to the noise levels. Timber activities normally begin shortly after daybreak and continue until late afternoon. A typical timber harvest might last for a period of 2 to 3 weeks, and return harvesting could occur 10 or more years later. Noise levels associated with timber harvest operations in the Limited Use Area (LUA) were monitored on April 3, 1998 (U.S. Army, 2000b). Although the measurements were not taken near Peason Ridge, the levels are representative of that area. Table 3.9–6 lists noise levels from the heavy equipment used in the operation.

***Recreational Shooting***. Deer, squirrel, turkey, dove, quail, woodcock, hog, and duck are hunted on the lands around Peason Ridge. A variety of shotguns and rifles with various types of ammunition are used, depending on the hunter's quarry. Quantifying the noise associated with the shotgun and rifle blasts is difficult because the weapon used, the ammunition load, and the firing frequency change as the hunting season changes. Table 3.9–7 shows the peak noise levels from recreational hunting in open versus pine-forested lands. Four firearms are used for three different types of hunting. The noise measured at 920 feet reflects actual measurements taken at a rifle range. The other two columns are calculated or predicted noise levels.

**Table 3.9–6**
**Noise Levels from Timber Operations.**

| Source | Max Noise Level at Distance | LEQ |
|---|---|---|
| Bulldozer | 87 dBA (30 ft); 79 dBA (75 ft) | 72.8 at 75 ft |
| Skidder | 82 dBA (60 ft); 79.5 dBA (100 ft) | 69.5 at 100 ft |
| Loader | 65 dBA (250 ft) | 61.4 at 250 ft |

Source: U.S. Army, 2000b.

**Table 3.9–7**
**Unweighted Peak Noise Levels Associated with Recreational Hunting**

| Type of Hunting | Firearm[1] | Measured at 100 feet | Measured at 920 feet | 6 dB Drop with Doubling of Distance at 920 feet | With Forest at 920 feet |
|---|---|---|---|---|---|
| Deer | Remington 7mm | 103.3 | 84.3 | 83.9 | 64.1 |
| | Black Powder .50 cal | 102.6 | 81.6 | 83.3 | 61.8 |
| Dove | Shotgun 12-ga, #6 shot | 97.0 | 77.0 | 77.6 | 57.8 |
| Turkey | Shotgun 12-ga, #4 shot | 105.3 | 82.0 | 85.9 | 66.1 |

[1] The weight of the gunpowder load was not specified.
Source: U.S. Army, 2000b.

***Recreational Off-road Vehicles***. The public may use ATVs for hunting or pleasure on some game management lands around Peason Ridge. The typical noise level measured near an ATV is approximately 93 dBA (Lankford et al, 2000). No noise studies to quantify recreational off-road vehicles in the Peason Ridge area were located.

### *3.9.3 Ambient Noise Environment*

Ambient noise is the summation of all noises, natural and man-made, around Peason Ridge. The average ambient noise level within Peason Ridge's boundary is approximately 60 dB ADNL, accounting for troop activities associated with the typical JRTC rotations and Home-Station Unit training. There are periods of time and specific locations where the noise levels exceed the 60 dB or fall to the natural background level of 45 dB. Using the measured data collected during the 1998 noise assessment, noise levels in the area around the drop zone in the northwest corner of Peason Ridge approach 77 dB. Noise levels in the flight corridor along the approach to the drop zone are estimated to be 65 dB during flyovers. Noise levels of 57 to 62 dB CDNL, due to artillery, extend off the northern boundary. This area may experience noise levels in the range of 62 to 70 dBC during periods of high activity or under certain weather conditions.

## *3.10 AIR QUALITY*

### *3.10.1 Regulatory Framework*

The Clean Air Act (CAA) provides the principal framework for national, state, and local efforts to protect air quality. Under the CAA, USEPA's Office of Air Quality Planning and Standards (OAQPS) is responsible for setting standards, known as National Ambient Air Quality Standards (NAAQS), for pollutants considered harmful to humans and the environment. OAQPS is also responsible for ensuring that these air quality standards are met or "attained" (in cooperation with state, tribal, and local governments) through national standards and strategies to control pollutant emissions from automobiles, factories, and other sources. Section 110 of the CAA requires each

state to submit a State Implementation Plan (SIP), which provides for the "implementation, maintenance, and enforcement" of the primary and secondary ambient air quality standards. The intent of the CAA is to require states to submit SIPs that, upon approval by USEPA, will allow the states to regulate air pollution within their borders. SIPs must include enforceable emissions limitations, provide for monitoring, and prohibit emissions that will contribute to the nonattainment of a standard.

Table 3.10–1 shows the NAAQS values for the six criteria pollutants. The CAA requires states to monitor ambient levels of these pollutants and to develop air quality management plans to ensure that the NAAQS are achieved and maintained. Louisiana

**Table 3.10–1**
**National Ambient Air Quality Standards (Primary)**

| Pollutant | Standard Value | Standard Type |
|---|---|---|
| Carbon monoxide (CO) | | |
| 8-hour average | 9 ppm | Primary |
| 1-hour average | 35 ppm | Primary |
| Nitrogen dioxide ($NO_2$) | | |
| Annual arithmetic mean | 0.053 ppm | Primary and secondary |
| Ozone ($O_3$) | | |
| 1-hour average | 0.12 ppm | Primary and secondary |
| Lead (Pb) | | |
| Quarterly average | 1.5 $\mu g/m^3$ | Primary and secondary |
| Particulate (PM-10)[1] | | |
| Annual arithmetic mean | 50 $\mu g/m^3$ | Primary and secondary |
| 24-hour average | 150 $\mu g/m^3$ | Primary and secondary |
| Sulfur dioxide ($SO_2$) | | |
| Annual arithmetic mean | 0.03 ppm | Primary |
| 24-hour average | 0.14 ppm | Primary |
| 3-hour average | 0.50 ppm | Secondary |

Source: USEPA, 2002a.
Note: ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.
[1] PM-10 is particulate matter 10 micrometers or less in diameter; PM-2.5 is particulate matter 2.5 micrometers or less in diameter.

has an approved SIP to address the requirements of the CAA. Areas that fail to meet the NAAQS are designated nonattainment areas and are potentially subject to regulatory enforcement. USEPA issued a final rule revising the air quality standards for particulate matter and ozone on July 16, 1997. In the revised final rule, the standard values for ozone and particulate matter were changed as shown in Table 3.10-2.

**Table 3.10–2**
**Changes in Ozone and Particulate Matter Standard Values**

| Pollutant | Standard Value | Standard Type |
|---|---|---|
| **Ozone ($O_3$)** | | |
| From: 1-hour average | 0.12 ppm ($235\ \mu g/m^3$) | Primary and secondary |
| To: 8-hour average | 0.08 ppm ($157\ \mu g/m^3$) | Primary and secondary |
| **Particulate Matter (PM)** | | |
| From: Annual arithmetic mean | $50\ \mu g/m^3$ | Primary and secondary |
| 24-hour average | $150\ \mu g/m^3$ | Primary and secondary |
| To: Annual arithmetic mean | $15\ \mu g/m^3$ | Primary and secondary |
| 24-hour average | $65\ \mu g/m^3$ | Primary and secondary |

Source: USEPA, 2002b.

***Ozone and Particulate Matter.*** USEPA issued final rulings for new NAAQS for ozone and PM on July 18, 1997. Public and industry concerns over the new rulings lead the U.S. Supreme Court to issue unanimous affirmation that the USEPA has authorization to set national air quality standards. USEPA is assessing the implementation of their final ruling for ozone and PM standards pursuant to D.C. Circuit Court instructions issued in May 1999.

USEPA's present implementation status for these two criteria pollutants is described below.

***Ozone.*** USEPA is reviewing the results of the litigation to determine the approach and schedule for moving forward with implementing the ozone standard. USEPA will confer with states and other interested parties to revise the Implementation Plan and then publish a final notice of Proposed Rule. Implementation or replacement of the present 1-hour standard with an 8-hour standard at a level of 0.08 parts per million (ppm) is expected sometime during 2003.

***Particulate Matter.*** The litigation over the fine particle standards (changing from PM-10 to PM-2.5) has not yet affected USEPA or state activities related to these standards. The PM-2.5 standard to be added will be set at 15 micrograms per cubic meter ($\mu g/m^{3)}$ based on the 3-year annual arithmetic mean. The 1997 fine particle standards cannot be implemented until USEPA and the states collect 3 years of monitoring data to determine which areas are not attaining the standards. In most cases, areas would not be designated "attainment" or "nonattainment" for fine particles until 2004 or 2005. USEPA intends to solicit states to voluntarily start moving toward the new standards in 2003.

***Prevention of Significant Deterioration.*** The CAA also established the Prevention of Significant Deterioration (PSD) program. The PSD program is intended to prevent areas that are cleaner than the minimum standards set by the NAAQS from having their air quality degraded, while at the same time allowing some growth. Every new, modified, or expanded "major emitting facility" stationary source in an attainment or unclassifiable area is required to use the "best available control technology" for preventing significant degradation of air quality. The PSD program also establishes maximum allowable increases that limit the overall increase in pollution levels over the baseline concentrations in clean air areas. These increase limits are listed in Table 3.10–3.

### *3.10.2 JRTC and Fort Polk Existing Air Emissions*

The JRTC and Fort Polk is located in Louisiana Air Quality Control Regions (AQCRs) 106 and 022. Air quality in this region is enforced by the LDEQ, Office of Air Quality and Radiation Protection, with rules promulgated by USEPA. The LDEQ, the agency with the overall authority for air quality, has adopted an implementation plan to achieve compliance with the NAAQS for the criteria pollutants (see Table 3.10–1). Fort Polk is primarily in Vernon Parish; Peason Ridge

is in Sabine, Natchitoches, and Vernon Parishes. England Airpark, the JRTC and Fort Polk's primary departure and return point for deploying units, is located in Rapides Parish (AQCR 106), and Horse's Head is in Natchitoches Parish (AQCR 022). Air quality in all four parishes meets or exceeds the NAAQS as established by USEPA, and therefore the area is considered an attainment area according to 40 CFR 81.319 (USEPA, 2002c). Fort Polk is in compliance with all federal, state, and local environmental standards, rules, and regulations.

Table 3.10–4 identifies Army actions at the JRTC and Fort Polk that produce air emissions, and characterizes the types of emissions associated with each action and the period of occurrence.

***Stationary Sources***. The JRTC and Fort Polk is designated as a major stationary source of air pollutants and operates under CAA Title V, Part 70, and operating permit No. 2960-0010-V2. In addition to an air emissions inventory, an annual regulatory analysis and compliance assessment is completed to determine the compliance status of each emission source with all applicable regulatory requirements.

**Table 3.10–3**
**PSD Emissions Increase Limits**

| Pollutant | Limit value (Tons/yr) |
|---|---|
| Oxides of nitrogen ($NO_x$) | 40 |
| Volatile organic compounds (VOCs) | 40 |
| Particulate Matter (PM) | 15 |
| Carbon monoxide (CO) | 100 |
| Oxides of sulfur ($SO_x$) | 40 |

Source: EPA, 2002a.

**Table 3.10–4**
**Historical Army Actions Emitting Air Pollutants at the JRTC and Fort Polk**

| Action | Type of Emission | Period of Occurrence | Primary Area Effected |
|---|---|---|---|
| Training exercises | Vehicle and aircraft emissions<br>Fugitive dust | Ongoing/recurrent | Training areas at the JRTC and Fort Polk and Peason Ridge<br>Aircraft operations |
| Obscurants/pyrotechnic devices | Smoke | Ongoing/recurrent | Training areas at the JRTC and Fort Polk and Peason Ridge |
| Live-fire exercises | Emission from artillery<br>Fugitive dust | Ongoing/recurrent | Firing/impact ranges at the JRTC and Fort Polk and Peason Ridge |
| Industrial operations (Title V) | Criteria and toxic pollutants | Ongoing | North and south JRTC and Fort Polk cantonment areas |
| Explosive ordnance (Title V) | Emissions from open burn/open detonation | Ongoing/recurrent | EOS area, the JRTC and Fort Polk |
| Prescribed fire | Smoke | Ongoing/recurrent | The JRTC and Fort Polk, Peason Ridge |

Permitted stationary sources include gasoline and JP-8 (jet fuel) storage, fueling and dispensing facilities, paint booths, generators, HVAC units, wastewater treatment facilities, degreasing operations, and solvent reclamation. The JRTC and Fort Polk maintains compliance with the CAA by using a compliance assurance database. This database allows the installation to document, track, and verify compliance activities associated with the requirements of its Title V permit.

***Hazardous and Toxic Air Pollutants (HAPs and TAPs.)*** In addition to the criteria pollutants discussed above, USEPA has identified other HAPs such as the polyaromatic hydrocarbon (PAH) family of dioxins, BTEX, MTBE, and other polybenzene compounds (7-PAH and 16-PAH). The amount of PAH compounds generated from combustion of JP-8 is significantly lower than that generated from JP-4 or other diesel-containing fuel. Approximately 0.006 percent of the VOCs produced from heavy diesel duty trucks is in the form of PAH. The national yearly estimate from all road vehicles is 1.5 million tons of PAH compounds. This amount is equal to the amount produced annually by forest fires in the United States, but is surpassed by the amount from municipal waste combustion and coal combustion.

Table 3.10–5 displays total annual emissions under the installation's Title V Operating Permit during the period 1996–2000 for criteria pollutants, and for TAPs and HAPs regulated by USEPA or the LDEQ.

**Table 3.10–5**
**The JRTC and Fort Polk Title V Pollutant Emissions (Tons)**

| Year | Criteria Air Pollutants[1] | | | | | |
|---|---|---|---|---|---|---|
| | VOCs | $NO_x$ | CO | $SO_2$ | PM-10 | LTAPs[2] |
| 1996 | 70 | 26 | 8 | 0 | 2 | 8.51 |
| 1997 | 98 | 38 | 10 | 3 | 7 | 10.89 |
| 1998 | 67 | 37 | 9 | 2 | 3 | 14.93 |
| 1999 | 52 | 29 | 10 | 1 | 2 | 7.65 |
| 2000 | 47 | 33 | 11 | 1 | 2 | 6.8 |
| 2001 | 55 | 57 | 35 | 1 | 5 | 6.0 |

Source: URS Corporation, 2001; Fort Polk Air Section.

[1] Criteria pollutants: $NO_x$ = nitrous oxides; CO = carbon monoxide; $SO_2$ = sulfur dioxide; PM-10 = particulate matter less than 10 micrometers in diameter. The JRTC and Fort Polk does not emit reportable quantities of lead, a sixth criteria pollutant.

[2] LTAPs = Louisiana Toxic Air Pollutants. Includes "hazardous air pollutants" listed by USEPA and "toxic air pollutants" listed by the LDEQ.

***Mobile Sources***. Additional air pollutants generated at the JRTC and Fort Polk are a result of nonstationary sources such as vehicular emissions, aircraft engine emissions, decomposition products of propellants, explosives, and emissions from prescribed burning and wildfires. Although air quality standards might be exceeded temporarily at points within the installation boundary during training events, the events do not cause exceedances outside the JRTC and Fort Polk Military Reservation. Mobile sources at the JRTC and Fort Polk include civilian automobiles, commercial vehicles, construction equipment, and military vehicles used for training such as tanks, light armored vehicles, and fixed-wing and rotary-wing aircraft. The training area of Peason Ridge is about 15 miles north of the JRTC and Fort Polk. Training

operations require military vehicles to travel on LA Hwy 117 and the JRTC and Fort Polk/Peason Ridge tank trail, which create a line source of air emissions.

The quality of air between ground level and 3,000 feet above ground level (AGL) is the region of most concern to the human environment. USEPA generally uses 3,000 feet AGL as the default mixing height (or depth) across the United States. Below 3,000 feet, there is less mixing of the atmosphere, resulting in stagnation of airflow, and emissions are not as easily dispersed into the upper atmosphere. Pollutants emitted above the mixing height (3,000 feet AGL) become diluted in the very large volume of air in the troposphere before they are slowly transported down to ground level. Because these emissions have little or no effect on ambient air quality, the air quality analysis focuses on emissions below 3,000 feet AGL.

An estimated contribution to air quality resulting from mobile emissions of NAAQS is depicted in Table 3.10–6. The population inventory used for these estimates was received from Fort Polk's Public Affairs Office (PAO). Military vehicle miles were estimated from Fort Polk operations data and estimates from previous annual training rotations. Emission factors used for mobile contributors were obtained from USEPA's AP-42 Mobile Emissions database (USEPA. 1998).

**Table 3.10–6**
**CY 2001 Estimated Criteria Pollutants Resulting From Mobile Emissions (Tons/Year)**

| Contributor | NOx | VOC | CO | PM-10 | SOx |
|---|---|---|---|---|---|
| Private vehicles | 499.01 | 1,309.70 | 16,894.12 | 22.23 | 29.05 |
| Government vehicles | 9.45 | 28.35 | 319.95 | 0.40 | 0.54 |
| Military training vehicles/equipment | 67.06 | 16.48 | 196.69 | 7.74 | 11.51 |
| Aircraft | 6.61 | 5.74 | 19.35 | 3.36 | 1.51 |
| **Totals** | **582.13** | **1,360.28** | **17,430.12** | **33.75** | **42.62** |

Source: Tetra Tech, Inc., 2002.

***Prescribed Burning.*** The JRTC and Fort Polk ENRMD, NRMB is responsible for forest management activities on Army land at the JRTC and Fort Polk, and the Forest Service manages the IUA, LUA, and SLUA. The longleaf pine (*Pinus palustris*) ecosystem is the dominant vegetation type over much of the JRTC and Fort Polk, Peason Ridge, and the Forest Service lands used by the Army for training. The longleaf pine forest is a "fire climax" ecosystem that depends on fire to maintain itself. Healthy longleaf pine habitat is critical to recovery efforts for the RCW, which is on the federal endangered species list. Prescribed burning is the most important forest management tool used by the Forest Service and NRMB for managing longleaf pine forest for habitat for the RCW and other wildlife.

Prescribed burning can be accomplished only under limited weather conditions. Weather criteria considered are surface winds, air temperature, transport winds, relative humidity, fuel loading, number of days since last rainfall, and amount of fuel moisture. Prescribed burning is allowed from November 15 through March 31 each year. Burns are conducted on days when no training is scheduled (ENRMD, 2001). Prescribed burning has a direct effect on the air quality of the region, but the impact is minimal because the burns are planned during certain weather conditions

and within specific ranges of fuel moisture. Air quality conditions resulting from prescribed burns are temporary and of short duration.

***Biological Integrated Detection System (BIDS) Training.*** The 7th Chemical Company, 142nd Corps Support Battalion conducts training using the BIDS to attain readiness for the detection of biological hazards. To simulate the release of biological agents by hostile forces, the 7th Chemical Company employs the M31E1 vehicle to disseminate the irradiated biological simulant *Bacillus subtilis* (BG) during BIDS training. BG is an ubiquitous bacterium commonly found in nature, in water, soil and air, and harmless to humans and the environment. The BG is irradiated before use to further ensure its safety to humans and the environment. Management and release of the simulant is conducted in accordance with Standard Operating Procedures (SOP) that specifies locations and conditions for this training. Two release points (Avellino Drop Zone and Peason Forward Landing Strip) are approved on the Peason Ridge Training area, and one release point (Geronimo FLS in the Fullerton Training Area) on the Main Post is approved. Use of the BIDS releases suspended PM-10. In the immediate vicinity of the release points, PM-10 concentrations may exceed the primary NAAQS of 150 $\mu g/m^3$. However, particulate emissions are brief in duration (30 minutes or less), dissipate quickly with volatile air movement, occur during relatively infrequent training events (12 per year), and in the controlled localized areas identified above.

***Other Sources***. In addition to stationary sources, air pollutants are generated at the JRTC and Fort Polk from activities such as fugitive dust from training vehicles; exhaust emissions from training vehicles; aircraft engine emissions; decomposition products of propellants, obscurants, pyrotechnics, explosives; and emissions from prescribed burning and wildfires. In 1989, the JRTC and Fort Polk received exemption, under 33 LAC III:1111, for air emissions resulting from fugitive dust from vehicles, smoke from obscurant burning fog oil and decomposition, burning of tires (which has been eliminated from the JRTC and Fort Polk practice), and in-place detonation of small explosives associated with training exercises conducted within the boundaries of the military reservation and Peason Ridge training area (letter from the LDEQ dated July 21, 1989). Although air quality standards may be exceeded locally at source points within the installation boundary during training events, the events do not cause exceedances or visual obstructions outside the JRTC and Fort Polk Military Reservation.

Pollutant emissions also arise from silvicultural practices like site clearing and construction earthwork, and from military field training events. Military training events produce fugitive dust, exhaust emissions, and combustion by-products from operation of vehicles and equipment, generation of obscurant smoke, and detonation of explosives. Nonanthropogenic sources also contribute to air pollutant emissions in the region. These include natural events such as forest fires set by lightning, emissions of VOCs from pine forests, and episodic releases of pollen from pine and hardwood trees.

### *3.10.3 Region of Influence Air Quality*

As described above, the JRTC and Fort Polk is in three parishes that are all classified as attainment areas by USEPA: Vernon, Sabine, and Natchitoches. Federal actions must consider the effects of their activities on the air quality in the ROI. Table 3.10–7 compares the 2000 Certified Emissions Report of Criteria Pollutants in the ROI parishes, and the percent contribution from the JRTC and Fort Polk relative to the parishes.

**Table 3.10–7**
**CY 2000 Certified Emissions Report of Stationary Sources in the ROI**
**(Tons per Year)**

| Source | NOx | VOC | PM | CO | SOx |
|---|---|---|---|---|---|
| Natchitoches Parish | 2,685 | 967 | 455 | 4,080 | 296 |
| Sabine Parish | 214 | 1,084 | 363 | 1,317 | 12 |
| Vernon Parish | 464 | 198 | 2.3 | 383 | 59 |
| JRTC and Fort Polk | 33 | 47 | 2.0 | 10 | 1 |
| Duke Energy 1 | 298.8 | 109.5 | 0.3 | 185 | 58.1 |
| Duke Energy 2 | 129.1 | 35.6 | 0 | 187.1 | 0 |
| Tenn. Gas Line | 4.0 | 6.0 | 0 | 0 | 0 |
| **Total ROI Parishes** | 3,363 | 2,249 | 820.3 | 5,780 | 67 |
| Percent JRTC and Fort Polk Contribution to Vernon Parish | 7 | 24 | 87 | 3 | 1.7 |
| Percent JRTC and Fort Polk contribution to all above listed Parishes | 0.98 | 2.09 | 0.24 | 0.17 | 1.49 |

Note: Values are for certified stationary sources and do not include emissions from training activities, mobile sources, or aircraft sources.
Source: LDEQ, 2002.

## *3.11 SOCIOECONOMICS*

This section describes the economic and the sociological environment regionally and in the areas immediately adjacent to Fort Polk's Peason Ridge. The socioeconomic indicators used for this study include population, employment, income, and housing. These indicators characterize the region of influence (ROI). An ROI is a geographic area selected as a basis on which social and economic effects of project alternatives are analyzed. The criteria used to determine the ROI are the parish or parishes where the project would be located, the distribution of residents that could be affected by the action, and the location of businesses providing goods and services to Fort Polk. Based on these criteria, the ROI for the social and economic environment is defined as Natchitoches, Sabine, and Vernon Parishes. The ROI covers 3,448 square miles.

The baseline year for the socioeconomic analysis is 2000. This is the most recent year for which socioeconomic indicators for the ROI are reasonably available. Where 2000 data are not available, the most recent data are presented.

### *3.11.1 Regional Economy*

#### *3.11.1.1 Population*

The population of the ROI in 2000 was 115,070, a decrease of 5.1 percent from the 1990 ROI population of 121,296 (US DOC, Census, 2001; US DOC, Census, 2002). The population in Natchitoches Parish increased by 6.5 percent between 1990 and 2000, Sabine Parish increased by 3.6 percent, but Vernon Parish decreased by 15.2 percent, primarily as a result of base restructuring.

#### *3.11.1.2 Employment*

The primary sources of employment in the ROI were government, services, retail trade, and manufacturing, which together accounted for 80 percent of total employment (Woods & Poole

Economics, 2002). Thirty-nine percent of all jobs were in the government sector, and 17 percent were in the services sector. Retail trade accounted for 15 percent of employment, and the manufacturing sector accounted for another 10 percent (Woods & Poole Economics, 2002). Major employers in the ROI included the Natchitoches, Sabine, and Vernon Parish School Districts, ConAgra Poultry Company, Boise Cascade Corporation, the Bayne-Jones Army Community Hospital, and Willamette Industries, Inc. (Louisiana Department of Economic Development, 1998).

The ROI civilian labor force totaled 43,860 in 2000 (LDOL, 2002). The ROI unemployment rate averaged 5.6 percent in 2000, somewhat higher than the national rate of 4.0 percent (LDOL, 2002).

#### *3.11.1.3 Manufacturing and Commercial Activities*

***Timbering.*** Forestry is the second leading industry in the state and supports the economy with more than 25,000 manufacturing jobs (Louisiana Forestry Association, 2000). The KNF provides timber products within a 30-parish market area of central and northern Louisiana, including the three parishes within the ROI (KNF, 1999). Private landowners and public corporations such as Boise Cascade and Willamette Industries produced most of the timber. Table 3.11–1 lists estimated stumpage value of the timber severed in the parishes within the ROI, and Table 3.11–2 lists the amount of timber severed and the tax receipts received by each parish.

**Table 3.11–1**
**2000 Estimated Timber Stumpage Value**

| Parish | Pine Sawtimber | Hardwood Sawtimber | Pine Pulpwood | Hardwood Pulpwood | Pine Chip-n-Saw |
|---|---|---|---|---|---|
| Natchitoches | $17,627,783 | $703,281 | $4,636,820 | $381,828 | $489,374 |
| Sabine | $18,482,383 | $433,522 | $6,054,499 | $273,276 | $1,011,227 |
| Vernon | $26,460,949 | $424,268 | $7,799,243 | $344,282 | $2,092,202 |
| ROI | $62,571,115 | $1,561,071 | $18,490,562 | $999,386 | $3,592,803 |

Sources: LDAF, 2000; LDAF, 2001.
Note: Values are estimates because unit prices used to calculate stumpage value reflect total volume and total value ratios paid from bid and negotiated sales. Values do not represent inter- or intra-company transactions and long-term contracts. The purpose of the reported unit values is to provide a guide for private timber owners in determining stumpage prices regionally or statewide, to establish annual stumpage price figures for severance tax purposes, and to determine the timber value for use-value assessment of forest land (LDAF, 2000).

**Table 3.11–2**
**2000 Timber Severed and Tax Receipts**

| Parish | Pine and Hardwood Sawtimber (board feet, Doyle scale) | Pine and Hardwood Pulpwood (standard cord) | Chip-n-Saw (standard cord) | Total Tax |
|---|---|---|---|---|
| Natchitoches | 52,415,089 | 228,780 | 4,701 | $731,778 |
| Sabine | 53,114,025 | 275,684 | 9,714 | $833,112 |
| Vernon | 74,851,989 | 353,014 | 20,098 | $1,125,450 |
| ROI | 180,381,103 | 857,478 | 34,513 | $2,690,340 |

Source: LDAF, 2001.
Note: Taxes collected based on stumpage values set by the Louisiana Forestry Commission and the Louisiana Tax Commission. Seventy-five percent of the above tax is returned to the parish and 25 percent goes to the state's general fund (LDAF, 2001).

***Other Commercial Activities.*** Industries in the ROI other than timbering include ConAgra Poultry Company in Natchitoches Parish; Holloway Sportswear, Sabine Manufacturing, and ConAgra Poultry Company in Sabine Parish; the Coca-Cola Bottling Company in Vernon Parish; and four dairies operating in Vernon Parish (Louisiana Department of Economic Development, 1998; JRTC and Fort Polk, 1998).

#### *3.11.1.4 Income*

ROI per capita personal income (PCPI) in 2000 was $18,976. This is an increase of 32 percent from the 1990 PCPI of $14,357 (US DOC, BEA, 2002). The PCPI of the ROI was lower than Louisiana's PCPI of $23,090 and the national PCPI of $29,000 (US DOC, BEA, 2002).

#### *3.11.1.5 Housing*

There were 51,591 housing units in the ROI in 2000, as shown in Table 3.11–3. Homeowner vacancy rates are low in the ROI, whereas rental vacancy rates are high. The transfer of the 5th Infantry Division (Mechanized) from Fort Polk to Fort Hood, the realignment of the JRTC to Fort Polk in 1992, and the more recent force structure changes of 1995 and 1996 have changed the rental housing market conditions from mild shortages to moderate surpluses. Surpluses are largely due to a smaller permanent party population, and the rotational nature of the new mission and the resultant lower demand for housing.

**Table 3.11–3**
**ROI Housing Statistics by Parish**

| | Natchitoches | Sabine | Vernon | ROI |
|---|---|---|---|---|
| Total Housing Units | 16,890 | 13,671 | 21,030 | 51,591 |
| Occupied Housing Units | 14,263 | 9,221 | 18,260 | 41,744 |
| Owner-occupied | 9,198 | 7,471 | 10,352 | 27,021 |
| Percent owner-occupied | 64.5 | 81.0 | 56.7 | 67.4 |
| Renter-occupied | 5,065 | 1,750 | 7,980 | 14,795 |
| Percent renter-occupied | 35.5 | 19.0 | 43.3 | 32.6 |
| Vacant housing units | 2,627 | 4,450 | 2,770 | 9,847 |
| Homeowner vacancy rate (percent) | 1.8 | 2.9 | 3.1 | N/A |
| Rental vacancy rate (percent) | 9.4 | 10.8 | 8.6 | N/A |

There are no homesites or private land inholdings on Peason Ridge. Residences bordering Peason Ridge are in Kurthwood, near LA 117, to the southeast; to the northeast near LA 117; along the northern border of Peason Ridge; and in the town of Kisatchie, about 2 miles northeast of Peason Ridge. These areas are rural and sparsely populated.

### *3.11.2 Public Recreation*

Recreational opportunities and facilities are plentiful in the ROI. Numerous public and private facilities for outdoor recreation are located throughout the area. After the state of Louisiana, the federal government maintains the second-largest amount of recreation acreage in Louisiana. The KNF consists of six ranger districts and contains 603,769 acres of land, more than 561,000 of which are open to the public for dispersed recreation use (U.S. Forest Service, 1997, cited in US Army and USDA Forest Service, 1998). The Forest Service Kisatchie Ranger District has land in the ROI, including land on Peason Ridge.

Access to the forest is important to civilian and military populations in the area. Recreation activities in the KNF include hunting, camping, fishing, hiking, horseback riding, ATV-riding,

canoeing, nature studies, and driving for pleasure. There are approximately 60 recreation sites on the KNF. These sites include 303 developed camp sites, 393 primitive camp sites, five swimming areas, 228 family picnic tables, eight group picnic shelters, 17 boat launches, and 11 overlooks. The KNF also has the most extensive trail system in the state, with more than 321 miles of trails.

There is also a Wildlife Management Area (WMA) associated with Peason Ridge. The Wildlife Division of the Louisiana Department of Wildlife and Fisheries is responsible for proper management of wildlife resources in these areas, although other government or private organizations might own the land. There are 48 WMAs throughout the state. The U.S. Army and the Forest Service own the land in the Peason Ridge WMA. Public recreational activities other than hunting occur only rarely on the Peason Ridge WMA. Camping is not permitted.

### *3.11.3 Environmental Justice*

On February 11, 1994, the President issued Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*. The Executive Order is designed to focus the attention of federal agencies on the human health and environmental conditions in minority communities and low-income communities. Environmental justice analyses are performed to identify potential disproportionately high and adverse impacts from proposed actions, and to identify alternatives that might mitigate these impacts. Minority populations included in the census are identified as Black/African American; American Indian and Alaska Native; Asian; Native Hawaiian and other Pacific Islander; Hispanic; of two or more races; and other. Poverty status, used in this EA to define low-income status, is reported as the number of persons with income below the poverty level. The 2000 Census defines the poverty level as $8,794 annual income, or less, for an individual, and $17,603 annual income, or less, for a family of four.

In 2000, 68 percent of the ROI population was white and 24 percent was Black/African American. All other racial groups combined totaled 8 percent of the population, including 4 percent of Hispanic origin (persons of Hispanic origin may be of any race, so they are also included in other applicable race categories). For comparison, in Louisiana, 63.9 percent of the population was white, 32.5 percent was Black/African American, and 3.6 percent was of another minority racial group. Approximately 2 percent was of Hispanic origin. For the United States, 75.1 percent of the population was white, 12.3 percent was Black/African American, 12.5 percent was of other minority racial groups, and 12.5 percent of the U.S. population was Hispanic (US DOC, Census, 2002). The ROI has a slightly lower percentage of minority residents than the state of Louisiana, and a higher percentage than the United States.

The Census Bureau bases the poverty status of families and individuals on 48 threshold variables, including income, family size, number of family members under the age of 18 and over 65 years of age, and amount spent on food. Approximately 20 percent of the ROI residents were classified as living in poverty, the same as the rate for Louisiana, but 8 percent higher than the poverty rate for the United States (US DOC, Census, 2002).

### *3.11.4 Protection of Children*

On April 21, 1997, the President issued Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks.* This Executive Order directs each federal agency to ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health or safety risks. Executive Order 13045 recognizes that a growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health and safety risks. These risks arise because children's neurological, immunological, digestive, and other bodily systems are still developing. Children eat more food, drink more fluids, and breathe more air in proportion to their body

weight than adults; children's size and weight may diminish their protection from standard safety features; and children's behavior patterns make them more susceptible to accidents because they are less able to protect themselves. Therefore, to the extent permitted by law, and appropriate and consistent with the agency's mission, the President has directed each federal agency to (1) make it a high priority to identify and assess environmental health and safety risks that might disproportionately affect children; and (2) ensure that the agency's policies, programs, and standards address disproportionate health risks to children that result from environmental health or safety risks. Examples of risks to children include increased traffic volumes, and industrial or production-oriented activities that generate substances or pollutants that children might come into contact with or ingest.

Children are present at Fort Polk as residents and visitors (e.g., family housing, schools, users of recreational facilities). The Army takes precautions for their safety by a number of means, including the use of fencing, limitations on access to certain areas, and provision of adult supervision. There is a fence around the perimeter of Peason Ridge.

### *3.11.5 Public Health and Safety*

A safe environment is one in which there is no, or a reduced, potential for bodily injury or illness, death, or property damage. The public health and safety issues associated with the proposed action include (1) both worker and general public health and safety during site preparation activities and facility construction; (2) public safety during the operation of both the new and existing facilities and during training and transportation activities; (3) aircraft and flight safety; and (4) public health effects from environmental exposures to hazardous wastes and hazardous materials. Issues related to vehicular traffic safety are presented in Section 3.12.1, Road Conditions and Traffic. Aircraft safety focuses on matters such as the potential for aircraft mishaps, airspace congestion, bird-aircraft strike hazards, munitions handling and use, flight obstructions, weather, and fire risks. Detailed presentations of aircraft safety, and munitions handling and use are presented under Section 3.12.2, Airspace and Air Traffic, and Section 3.13, Hazardous and Toxic Materials, respectively.

Construction worksite safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and the general public, which involve the implementation of operational practices that reduce risks of illness, injury, death, and property damage. The health and safety of on-site military and civilian workers are safeguarded by numerous DoD and Army regulations designed to comply with standards issued by the Occupational Safety and Health Administration, the U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health (NIOSH) and the USEPA. These standards specify the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits for workplace stressors.

Various stressors in the environment can adversely affect human health and safety. Identification and control or elimination of these stressors can reduce risks to health and safety to acceptable levels. The various stressors include

- *Physical Stressors.* Physical hazards in the environment can cause disability, disease, or death. These stressors encompass a wide range of factors, such as dust, humidity, temperature, noise, and radiation. Impacts of physical stressors can also be highly dependent on season and climate.
- *Behavioral Stressors.* Behavioral stressors include the effects of military activities on such psychological characteristics as emotion; motivation; the learning process; general behavior; and psychological needs such as freedom, space, privacy, and societal acceptance.

- *Psychological Stressors*. Some chemical and physical elements and situations can cause mental tension and strain. These psychological stressors are closely related to behavioral stressors. Psychological stressors can be physical in nature, such as traffic congestion, excessive noise, air pollution, or inadequate working and living facilities. They can also be emotional in nature, such as the effects of discrimination or sexual harassment. Stress is important from a health and safety viewpoint because it directly affects the quality of a person's mental and physical health, adversely affects task performance, and greatly increases the likelihood of accidents.
- *Chemical Stressors*. Several chemical substances, including endocrine disruptors (EDs), have the potential to produce undesired or toxic health effects. Some chemicals act locally and some act systemically (requiring absorption into the blood stream). EDs are a class of synthetic chemicals (e.g., PCBs), which, when absorbed into the body and blood stream, can cause hormonal disruption. Chemical stressors can be transmitted by air; by groundwater or surface water used for drinking, irrigation, or recreation; or by direct contact.

Safety and accident hazards can often be identified, and reduced or eliminated. Necessary elements for an accident-prone situation or environment include the presence of the hazard in the exposed (and possibly susceptible) population. The degree of exposure depends primarily on the proximity of the hazard to the population. Activities that can be hazardous under the proposed action include transportation, maintenance and repair activities, the creation of noisy environs, and training activities. Construction hazards can be considered from the standpoint of both design criteria and the hazards associated with the construction process. The proper operation, maintenance, and repair of vehicles and equipment carry important safety implications. The activities under the proposed action have the potential to affect the population centers located near the proposed activities.

The existing public health and safety system in the ROI is made up of a series of Army regulations and programs, as well as systems operated by the state and local parishes in the ROI. Those health and safety systems developed by the Army, the state, and the parishes are designed to protect the health and safety of the Army while enabling the Army to accomplish its mission, and protect the health and safety of the general public, specifically the residents of Louisiana and the individual parishes.

The Assistant Secretary of the Army for Installations and Environment has overall responsibility for the Army's Human Health and Safety programs. Two Army regulations govern these programs: AR 385-10 (*The Army Safety Program*), and AR 40-5 *(Preventive Medicine)*. AR 385-10 prescribes Department of the Army policy, responsibilities, and procedures to protect and preserve Army personnel and property against accidental loss. It provides for public safety incident to Army operations and activities, and safe and healthful workplaces, procedures, and equipment. This regulation assures statutory and regulatory compliance with the Occupational Safety and Health Act of 1970 as implemented by Executive Order 12196. This regulation applies to the active Army, the Army National Guard, the Army Reserve, and Army civilian employees. During mobilization, the proponent may modify chapters and policies contained in this regulation.

Army Regulation 40-5 is a consolidation of several regulations that cover the Army's preventative medicine program. It establishes the practical measures for the preservation and promotion of health and the prevention of disease and injury. This regulation implements Executive Order 12196, and DoD Instructions 6050.5, 6055.1, 6055.5, and 6055.12; and applies to all facilities controlled by the Army, and to all elements of the Army. This includes military personnel on active duty, Army Reserve or National Guard personnel on active duty or in drill

status, Military Academy cadets, Army Reserve Officer Training Corps cadets when engaged in directed training activities, foreign national military personnel assigned to Army components, and civilian personnel and nonappropriated fund employees who are employed by the Army on a worldwide basis.

Several other Army regulations are also important to the Army's Human Health program: AR 602-1 Human Factors Engineering Program, AR 602-2 Manpower and Personnel Integration (MANPRINT) in the Systems Acquisition Process, and AR 40-10 Health Hazard Assessment Program in support of the Army Materiel Acquisition Decision Process.

AR 602-1 covers the policies and procedures for human factors engineering (HFE) in the Department of the Army. It covers materiel acquisition procedures that influence the process of integrating the soldier and the material into a cost-effective system; and emphasizes front-end planning, nondevelopmental item (NDI) acquisition, and material change management.

AR 602-2 is the basis for establishing effective integration of manpower, personnel, training, human engineering, health hazards, system safety, and soldier survivability considerations into the acquisition of Army Materiel, Information, or Clothing and Individual Equipment (CIE) systems. It prescribes policies and assigns responsibilities for the Army MANPRINT program. The MANPRINT program influences the design of systems and associated support requirements so that developmental, nondevelopmental, and modified systems can be operated, maintained, and supported to improve total system performance and reduce cost of ownership by focusing on the capabilities and limitations of the human.

AR 40-10 describes the Army's Health Hazard Assessment Program in support of the Materiel Acquisition Decision Process. It lists the objectives and policies, defines responsibilities, describes specific procedures, and discusses the preparation and distribution of the Health Hazard Assessment Report.

Currently, there are no major military training operations with public health and safety concerns in the proposed DMPBAC site. Live ammunition is not used in areas accessible to the general public. Existing military munitions ranges and sniper training areas/rifle firing ranges at Peason Ridge are not currently accessible by the public, and are at sufficient distances from areas accessible to the general public that they are unlikely to present health and safety risks to the general public, including children.

## *3.12 TRANSPORTATION AND INFRASTRUCTURE*

### *3.12.1 Road Conditions and Traffic*

***Roadways.*** The Peason Ridge maneuver area is approximately 15 miles north of the JRTC and Fort Polk proper. Roadways around Peason Ridge enable movement of military vehicles during training exercises and civilian vehicles and also provide access for resource management personnel and maintenance crews. The area is bounded on the east by LA Hwy 117 and on part of the north by LA Hwy 118. LA Hwy 117 is generally a north-south roadway that links Leesville with Natchitoches. The Peason Tank Trail is an improved road maintained by the Army that connects Peason Ridge to the North Fort. It is used by the Army as the primary access route for military vehicles using Peason Ridge and the SLUA.

***Traffic.*** Since the transfer of the 5th Infantry Division from the JRTC and Fort Polk to Fort Hood, traffic on surrounding roadways has for the most part decreased or only moderately increased. The total number of vehicles using LA Hwys 467, 10, and 117, represented by Average Daily Traffic (ADT), has decreased over the past decade. LA Hwy 28 has had moderate (10 percent) increases in ADT over the past decade. Traffic on US Route 171 and LA Hwy 469, however, has substantially increased over the past decade—on the order of 63 percent and 43

percent, respectively. Level-of-Service (LOS) describes the operational condition of a road based on a volume-to-capacity ratio and usually falls into one of six categories, A through F. Table 3.12–1 presents the current ADT and LOS for the surrounding roadways of the JRTC and Fort Polk (Nugent, personal communication, 2002).

**Table 3.12–1**
**Current ADT and LOS for Surrounding Roadways**

| Roadway | ADT | LOS[1] |
|---|---|---|
| LA Hwy 10 | 6,700 | D |
| LA Hwy 28 | 4,100 | C |
| LA Hwy 117 | 4,000 | B |
| LA Hwy 467 | 4,000 | B |
| LA Hwy 469 | 800 | A |
| US Route 171 | 18,000 | C |

Source: LADOTD, Traffic Operations, District 08.
[1] LOS A – free flow/insignificant delays, LOS B – stable operation/minimal delays.
LOS C – stable operation/acceptable delays, LOS D – approaching unstable/tolerable delays.
LOS E – unstable operations/significant delays, LOS F – forced Flow/excessive delays.

### *3.12.2 Airspace and Air Traffic*

The JRTC and Fort Polk manages a dedicated Special Use Airspace (SUA) that spans 704,000 acres (1,100 square miles), with the military installation in the center. The SUA defines the airspace to which military aircraft activities are restricted. Flight restrictions and communication requirements within this area are not imposed on nonparticipating aircraft operating according to Visual Flight Rules (VFR). The SUA currently consists of three Warrior Military Operations Areas (MOAs), known as Warrior MOA1, MOA2, and MOA3. These three MOAs were reconfigured from five in 1997. The vertical limits of the MOAs span from 100 feet above ground level to 17,999 feet above mean sea level. The airspace above Peason Ridge and the proposed DMPBAC is Warrior MOA1, with a helicopter flight corridor (Track 1-A) connecting the airspace above the Main Fort. Helicopter maneuvers on Peason Ridge and in the vicinity of the proposed DMPBAC location include personnel drops in drop zones to train troops for quick insertion into an area. These drop zones can occur anywhere in Warrior MOA1 where there is a clearing that is large enough to accommodate a helicopter landing, level, and relatively free of ruts.

The JRTC and Fort Polk's Air Traffic Control (ATC) is the control agency for Warrior MOA1. Houston Air Route Traffic Control Center is in charge of the airspace above 5,000 feet mean sea level when Warrior MOA1 is not in use. Fort Polk aircraft and all aircraft associated with the JRTC currently operate under the Federal Aviation Administration (FAA) Regulations, General Operating and Flight Rules. These regulations prohibit aircraft operations within 500 feet of any person, vessel, vehicle, or structure, except for helicopters that "may be operated at less than the minimums … if the operation is conducted without hazard to persons or property on the surface. In addition, each person operating a helicopter shall comply with any routes or altitudes specifically prescribed for helicopters by the Administrator." These regulations apply for all civilians and private property and are currently observed for the military reservation and all outlying areas. Responsibilities and procedures for control of aircraft operations in Warrior MOA1 are delineated in accordance with a Letter of Agreement, Revision 1 (October 10, 1996) between the FAA, JRTC and Fort Polk Air Traffic Control, and five other air traffic control agencies (US Army and USDA Forest Service, 1998).

### 3.12.3 Water Supply

The 30 percent Concept Design Submittal for the DMPBAC, submitted by Polyengineering, Inc., indicates that the East Central Vernon Waterworks would be the supplier of potable water to the new training facilities at Peason Ridge. Water for the East Central Vernon Waterworks is supplied entirely by the Kurthwood Well, which can provide approximately 500 gallons per minute of raw water. In addition to the Kurthwood Well, a 150,000-gallon storage tank and two backup wells are connected to the system. Raw water treatment consists solely of automatic chlorine gas injection at the well yard for disinfection purposes. Current flows at the East Central Vernon Waterworks are approximately 50 percent of the 1.75 million gallons per day (MGD) maximum capacity. Static pressure at the site is approximately 60 pounds per square inch (psi), with a flow pressure of approximately 50 psi (Jeane, personal communication, 2002).

Potable water is also available at both South and North Fort Polk through two separate potable water systems. Water for South Fort Polk is supplied entirely by wells situated throughout that area. When run simultaneously, these wells have the ability to provide approximately 7.8 MGD. Because of the age and condition of the system, and the need for maintenance, a sustainable daily yield for water wells at South Fort Polk is about 5.2 MGD (Morgan Consultants, Inc., 1996). Annual water use in 2000 was about 2.15 MGD (Freese and Nichols, Inc., 2001). Water for North Fort Polk is supplied entirely by wells situated throughout that area. When run simultaneously, these wells can provide approximately 4.2 MGD. Because of the age and condition of the system, and the need for maintenance, a sustainable daily yield for water wells at North Fort Polk is about 3.5 MGD (Morgan Consultants, Inc., 1996). Annual water use in North Fort Polk and the North Fort Housing was approximately 950,000 gallons per day in 2000 (Freese and Nichols, Inc., 2001).

### 3.12.4 Sewage Treatment

The Peason Ridge Sanitary Sewage Treatment Facility, about 14 miles north of Leesville on LA Hwy 117 near Kurthwood, supports the sanitary sewage treatment requirements of the JRTC at the Peason Ridge Training Area. The facility serves the Peason Ridge cantonment area, which is composed primarily of administration buildings and barracks. The treatment facility is a lagoon system of the polishing pond type. It is segmented into three cells (primary settling, secondary settling, and final polishing) capable of processing 2,400 gallons of sewage per day, and has a total storage capacity of 1.5 million gallons. The effluent of the system is monitored with a V-notch weir and discharges to the west through Baygall Branch into Comrade Creek. Comrade Creek in turn flows through Cypress Bayou into the Calcasieu River. Flow monitoring has not been performed because most disposal occurs through evaporation rather than discharge. The NPDES permit, number G550200, limits discharge to 5,000 gallons per day.

### 3.12.5 Solid Waste Management

Solid waste is generated from two primary sources on the JRTC and Fort Polk—non-residential and residential. Non-residential solid wastes can be commercial or industrial, both of which are generated at the JRTC and Fort Polk. Commercial solid waste means all types of solid waste generated by stores, offices, restaurants, warehouses, and other nonmanufacturing activities, excluding residential and industrial solid wastes. Industrial solid waste means solid waste generated by a manufacturing, industrial, or mining process, or which is contaminated by solid waste generated by such a process. . Residential solid waste means any solid waste (including garbage, trash, and sludges from residential septic tanks and wastewater treatment facilities) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas). The primary solid waste operation occurring on the installation is collection for recycling and disposal. Non-residential and residential solid waste generate materials that can be recycled

on the installation, including newspapers, cardboard, aluminum, glass, plastics, steel cans, paper, metals, used oil, batteries, concrete, antifreeze, and parts washer solvent. Solid wastes generated on the installation were disposed of at the Army-owned Chaffee Road Landfill from October 1985 until October 1993, when the facility was closed. Solid waste generated at the JRTC and Fort Polk is now disposed of at IESI, a privately owned landfill. IESI is permitted for 59 acres and has an additional 172 acres available for future use. The JRTC and Fort Polk dispose of construction debris at Schammerhorn, which is a construction and demolition (C&D) debris landfill not permitted to receive refuse. Red River Service Corporation collects solid waste on the JRTC and Fort Polk (McCord, personal communication, 2002).

Non-residential and residential wastes are collected from housing areas, dumpsters in the cantonment area, and the Consolidated Solid Waste Collection Facility. Solid waste that cannot be recycled is shipped to a privately owned landfill, as mentioned previously. The JRTC and Fort Polk also generates nonhazardous solid wastes that must be handled separately from ordinary rubbish, such as contaminated soil, used batteries, aerosol cans, and fluorescent bulbs. These special wastes are collected at four locations on-post depending on the exact type of waste material. Contaminated soils are gathered at a collection point near the South Fort Wastewater Treatment Plant. Wastes collected at the 8300 Block are primarily from rotational units. Soldiers from the rotations segregate their wastes, and remove restricted items from the solid waste stream. The solid waste contractor collects solid wastes, which are subsequently landfilled. Restricted items from rotational units include aerosol cans, batteries, ammunition, and MRE heaters. Aerosol cans are punctured at the 8300 Block. Units return any ammunition to the ASP. ENRMD personnel at the 8300 Block handle segregated batteries and reissue any batteries with a remaining charge of 70 percent or greater. MRE heaters are activated in accordance with an agreement with the LDEQ to render them nonhazardous. The DRMO manages special wastes by shipping them to an appropriate disposal facility or by selling them for recycling. The HAZMART manages fluorescent tubes, antifreeze, and parts washer solvent that are generated in the cantonment area. The fluorescent tubes are sent out as universal waste and recycled. The HAZMART reprocesses used antifreeze and parts washer solvent and issues the treated materials for reuse.

According to the Solid Waste Annual Report for FY 2000, C&D debris accounts for the greatest volume of solid waste. In FY 1999 nearly 27,000 tons of C&D debris was generated, about 90 percent of which was recycled. In FY 2000 nearly 32,000 tons of C&D debris was collected, and 99 percent of that total was recycled. A large percentage of C&D debris is concrete, which can be recycled; it is crushed and used for various purposes (including road base). The total amount of solid waste generated on the JRTC and Fort Polk from FY 1998 to FY 2000 has tripled, rising from 15,002 tons in FY 1998 to 48,456 tons in FY 2000. The percentage of the solid waste stream that is recycled has increased from about 33 percent in FY 1998 to nearly 76 percent in FY 2000. The amount of savings to the Army from recycling has increased from about $150,000 in FY 1998 to more than $775,000 in FY 2000. Collection costs have increased from $25.55 per ton in FY 1999 to $28.33 per ton in FY 2000 (Freese and Nichols, Inc., 2001).

Data for paper, cardboard, and metal recycling on the installation have been maintained since FY 1998. A private contractor on the installation collects these materials and reports the volume of wastes recycled to the ENRMD each year. The total tonnage of materials recycled has increased from 1,235 tons in FY 1998 to 1,931 tons in FY 2000, an increase of 64 percent.

### *3.12.6 Electricity*

The existing electrical system on the JRTC and Fort Polk is divided into two distribution systems that serve the two distinct cantonment areas of the installation. Each system is supplied by its own substation. These substations receive their power at 34.5 kilovolts (kV) from Louisiana

Power and Light Co. The south substation transforms the power to a 13.8-kV distribution system, and the north substation transforms it to a 4.16-kV distribution system (Morgan Consultants, Inc., 1996). Overall electricity use was 189,245 megavolt-hours in 2000.

The south substation consists of three separate 22.4-megavolt-ampere (MVA) transformers owned and operated by Louisiana Power and Light for a total of 67.2 MVA. These transformers feed three separate 1,200-ampere buses, one for each transformer, with switching to allow the transformers to be operated in parallel or separately. There are seven separately protected aerial circuits fed by the three buses. All circuit breakers are of the oil type (Morgan Consultants, Inc., 1996).

The north substation consists of two separate 4-MVA transformers owned and operated by Louisiana Power and Light for a total of 8 MVA. These transformers feed two separate buses of unknown capacity, one for each transformer, with switching to allow the transformers to be operated in parallel or separately. There are four separately protected aerial circuits fed by the two buses, and each bus has a spare connection. All circuit breakers are of the oil type (Morgan Consultants, Inc., 1996).

## *3.13 HAZARDOUS AND TOXIC MATERIALS*

### *3.13.1 Background*

Hazardous material is defined as a substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and has designated as hazardous under section 5103 of Federal hazardous materials transportation law (49 USC 5103). The term includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (see 49 CFR 172.101), and materials that meet the defining criteria for hazardous classes in part 173 of Subchapter C, Chapter I, Title 49 CFR. (49 CFR 171.8). Hazardous waste means a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. [RCRA Sec. 1004(5)].

Evaluation of environmental risks from hazardous materials and wastes focuses on USTs, aboveground storage tanks (ASTs), and other storage implements and the manner by which such materials or wastes are stored, transported, used, and disposed of. In addition to being a threat to humans, the improper release of hazardous materials and wastes can threaten the health and well-being of wildlife species, vegetation and habitat, soil systems, and water resources. The extent of contamination associated with a release to the environment of hazardous materials or wastes is dependent on the environmental properties of the chemical, such as solubility, mobility, persistence, and chemical stability, and the type and nature of the soil, water resources, and topography. Hazardous materials are often used and stored, and hazardous wastes generated, in certain types of military support facilities, such as battery storage areas, and equipment and vehicle maintenance shops.

Examples of materials exhibiting hazardous characteristics that could be of concern at the DMPBAC, depending on plans for use, are fuels (diesel and gasoline); petroleum, oils, and lubricants (POL); solvents; paint and paint-related material from the maintenance building; flammable stains and coatings; cleaning products; photographic wastes; batteries; pesticides, insecticides, rodenticides, and herbicides; bomb propellants; smoke pots; flammable adhesives; calcium hypochlorite; and flameless ration heaters (from Meals-Ready-to-Eat). Hazardous waste

streams generated at the installation include gasoline-contaminated rags, soil, and used Drysweep, paint and paint-related waste; spent parts washer-solvent; batteries, gas mask filters; lead generated by smoke pots; and biological/chemical warfare decontamination kits. Nonregulated wastes include oil-, fuel-, and grease-contaminated rags and debris; all petroleum-contaminated soil and used Drysweep; grease; used oil; oil and fuel filters; used antifreeze; brake fluid and transmission fluid; asbestos; and nonflammable adhesives.

The primary regulatory agency for hazardous waste and hazardous materials at the JRTC and Fort Polk is the LDEQ in Baton Rouge. USEPA Region 6 provides oversight to LDEQ, and agencies have the authority to inspect and enact direct enforcement against the installation if releases of hazardous materials or wastes occur, or if problems with the installation's handling, storage, transportation, or disposal of hazardous materials or wastes are documented. Hazardous waste and materials handling, storage, and disposal must comply with both the *Louisiana Administrative Code*, 29 CFR Part 1910 Subpart H, and 40 of the *Code of Federal Regulations*.

The generation of hazardous waste at the JRTC and Fort Polk has decreased significantly over the past several years because of better education of individual generators on the post, improved business practices, and implementation of pollution prevention practices and equipment. However, the installation remains a large-quantity generator under the regulations of the Resource Conservation and Recovery Act (RCRA).

### *3.13.2 Storage and Handling Areas*

No storage and handling areas for hazardous materials and wastes are located on the proposed DMPBAC site or at Peason Ridge. Three 90-day hazardous waste storage sites are present at Fort Polk. Building 4053, at the DRMO, is the primary site where most of the installation's hazardous waste is stored prior to transportation, and it is operated by DRMO personnel. Another site is located adjacent to Buildings 4365 and 4372, and it is operated by Bayne Jones Army Community Hospital; only the hospital uses this site. The third site, Building 4369, is within the Department of Public Works (DPW) HAZMART Complex, and it is managed by the DPW ENRMD (ENRMD, 2002b). The purpose of HAZMART is to minimize hazardous waste and associated costs through closer oversight during procurement of hazardous materials. Such oversight may involve reissue of excess hazardous materials, when possible, and avoiding hazardous waste disposal by using the products elsewhere. Significant activities that occur at the HAZMART include recycling of antifreeze and parts-washer solvent; repackaging of damaged items; maintenance of a large, free-issue inventory of excess products; and researching of shelf life extensions for products when expiration dates are identified by the database (ENRMD, 2002b).

### *3.13.3 Use of Hazardous Substances*

No hazardous substances are used at the proposed DMPBAC site, although such substances are used at other sites managed by Fort Polk personnel. Hazardous substances, such as POLs, are used primarily for fueling of vehicles and equipment. Paint, batteries, and pesticides/herbicides are used for maintenance of equipment and military-provided housing. Paint-related materials are also used to maintain military machinery and equipment. Other miscellaneous hazardous substances, such as bomb propellants, smoke pots, flammable adhesives, hypochlorite, and MRE heaters are used for military training and water treatment.

### *3.13.4 Hazardous Waste Disposal*

The Military Munitions Rule (40 CFR 266 Subpart M) was promulgated in 1997 and identifies when military munitions become a solid waste. If the munitions solid waste are also classified as hazardous in accordance with 40 CFR Part 261, then they are managed accordingly. Presently no hazardous waste (including munitions waste) is generated at the proposed DMPBAC site. The

waste is routinely transported off-site for disposal at a permitted TSDF. Miscellaneous waste and debris left behind by rotational units, or pulled from the solid waste stream during sorting, are transported to the 8300 Block or the Consolidated Solid Waste Collection Facility at North Fort Polk. The 8300 Block serves as a satellite accumulation point for miscellaneous hazardous and non-hazardous items. Universal wastes at the installation include alkaline, lithium, nickel-cadmium, sealed lead acid, magnesium, mercury, and nickel metal hydride batteries; fluorescent lamps; pesticides; and herbicides. (ENRMD, 2002b).

Waste streams generated on a recurring basis each year are characterized annually or when changes occur in the process. Nonrecurring waste streams are analyzed and profiled as they are generated. If laboratory characterization of a certain waste is required, a sample of the waste is submitted to an EPA certified laboratory for necessary characteristic tests (ENRMD, 2002b).

### *3.13.5 Special Hazards*

Hazardous waste is managed through various Fort Polk personnel, primarily through the ENRMD. The ENRMD publishes a *Hazardous Waste Management Plan* that provides SOPs for the collection, storage, transport, and disposal of hazardous waste. The installation's solid waste management units (SWMUs) are regulated under LDEQ's RECAP program and have been evaluated accordingly.

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# *SECTION 4.0*
# *ENVIRONMENTAL AND SOCIOECONOMIC CONSEQUENCES*

## *4.1 INTRODUCTION*

Section 4.0 presents the environmental and socioeconomic consequences of implementing the proposed action and alternatives described in Section 2.0.

## *4.2 THRESHOLDS SUMMARY*

To ensure consistent and defensible evaluation of effects in the EA, thresholds of concern were developed for each resource. The thresholds were developed by NEPA professionals in their respective fields in coordination and consultation with stakeholder agencies. Although some thresholds have been so designated based on legal or regulatory limits or requirements, others reflect discretionary judgment and best management practices on the part of the Army and Forest Service in accomplishing their primary missions of military readiness and management of National Forest lands (including multiple use and access), respectively, while also fulfilling their conservation stewardship responsibilities. Quantitative and qualitative analyses have been used, if appropriate, in determining whether, and the extent to which, a threshold is exceeded. Based in part on the results of this analysis, preparers of the EA determined whether a particular effect would be minor, moderate, or significant. The following terms are used throughout this EA as a convention to indicate the relative degree of severity of predicted effects:

- ***Negligible.*** The term used to indicate the relative degree of severity of an environmental effect that could occur, but would be less than minor and might not be perceptible.

- ***Minor.*** The term used to indicate the relative degree of severity of an environmental effect that clearly would not be significant.

- ***Moderate.*** The term used to indicate the relative degree of severity of an environmental effect that is not significant but is readily apparent. Examples include cases where a "threshold of concern," as described in Table 4.2-1, might be approached; where the predicted consequences of implementing an action suggest the need for additional care in following standard procedures, employing best management practices, or applying precautionary measures to minimize adverse effects; or where there is some uncertainty inherent in whether the effects forecasted by a predictive model would occur.

- ***Significant.*** A measure, in terms of the degree of severity of the environmental effect of an action reflecting the context and intensity of the effect, as defined in CEQ Regulations (40 CFR 1508.27).

Thresholds of concern are presented in Table 4.2-1.

**Table 4.2–1**
**Thresholds of Concern[a]**

| Area of Concern | Spatial Boundary | Threshold of Concern: Proposed action would cause or result in[b] |
|---|---|---|
| ***Land Use/ Special Use Permits*** | Installation boundary, Kisatchie National Forest Management Area, or region of influence (ROI) | Precludes implementation or conflicts with Kisatchie National Forest Revised Land and Resource Management Plan, Fort Polk Integrated Natural Resource Management Plan, or Installation Master Plan<br><br>Conflicts with existing Forest Service Special Use Permits |
| ***Geology*** | Geology within subwatersheds of the installation boundary and Kisatchie National Forest Management Area | Denial in access to or availability of publicly or privately owned mineral resources |
| ***Soils*** | Soils within the ROI | Soil loss or compaction, at a landscape scale, that precludes natural reestablishment of native vegetation for no longer than two growing seasons, without substantial inputs/rehabilitation |
| ***Groundwater*** | Aquifer within the ROI | Degradation of aquifer water quality below Safe Drinking Water Act (SDWA) standards<br><br>Violation of drinking water standards |
| ***Water Resources:*** Surface Water Quality, Streams, Wetlands and Other Surface Water Resources | Subwatershed, USACE jurisdictional "waters of the U.S.," or state-designated stream segment within the installation boundary and the Kisatchie National Forest Management Area | New violations of state water quality criteria for listed stream reaches and their tributaries<br><br>Violation of federal or state discharge permits<br><br>Violation of Section 404 of the Clean Water Act (unpermitted deposition of dredged or fill material into wetlands or other "waters of the U.S.")<br><br>Net loss of wetlands (bogs, bay galls, hillside seeps, or riparian zones) within installation boundary (unmitigated) due to direct or indirect effects (e.g., sedimentation)<br><br>New or increased impairment of natural and scenic values of State Scenic Stream |

**Table 4.2–1**
**Thresholds of Concern[a]**

| Area of Concern | Spatial Boundary | Threshold of Concern: Proposed action would cause or result in[b] |
|---|---|---|
| ***Biological Resources*:** Forest Conditions, Native Plant Species and Communities | Installation boundary, Kisatchie National Forest Management Area | Inability to achieve forest management objectives for the Kisatchie National Forest due to reduced access or increased military use<br><br>Permanent net loss of red-cockaded woodpecker (RCW) foraging habitat from land base to level below that required for achieving long-term RCW population recovery objectives<br><br>Permanent conversion or net loss of forest lands at landscape scale relative to baseline<br><br>Permanent loss or substantial degradation of designated Proposed, Sensitive, or Conservation species site<br><br>Introduction or increased prevalence of undesirable species |
| ***Biological Resources:*** Wildlife and Aquatic Life | Species home range, local habitat, or migratory range intersecting the installation boundary or Kisatchie National Forest Management Area | Long-term loss or impairment of substantial portion of unique local habitat (species-dependent)<br><br>Biologically significant decline in population for Proposed, Sensitive, and Conservation Species |
| ***Biological Resources:*** Rare, Threatened and Endangered Species | Home range or protected habitat within the installation boundary or Kisatchie National Forest Management Area | U.S. Fish and Wildlife Service (USFWS) Jeopardy Opinion<br><br>Reduction of RCW foraging habitat for one or more clusters/groups to level below current USFWS guidelines<br><br>Direct mortality or other unpermitted "take" of threatened and endangered species |
| ***Cultural Resources*** | Site-specific | Irretrievable or irreversible damage to a prehistoric or historic site (exclusive of data recovery) that is listed or is eligible/potentially eligible for listing on the National Register of Historic Places |
| ***Noise*** | Land use zones within the ROI | Exceedance of noise limit guidelines published in AR200-1, Chapter 7 (1997) |
| ***Air Quality*** | Airshed (AQCR 106) or installation boundary (Title V) | Violation of National Ambient Air Quality Standards (NAAQS)<br><br>Violation of Title V Operation Permit |

**Table 4.2–1**
**Thresholds of Concern[a]**

| Area of Concern | Spatial Boundary | Threshold of Concern: Proposed action would cause or result in[b] |
|---|---|---|
| ***Social Conditions:*** Public Access and Recreational Use | Installation boundary, Kisatchie National Forest Management Area, | Long-term substantial loss or displacement of recreational opportunities/resources relative to baseline<br><br>Substantial degradation of recreational value |
| ***Social Conditions:*** Public Safety and Protection of Children | ROI | Public safety hazard from military operations<br><br>Public health hazard from exposure to hazardous waste or hazardous materials<br><br>Disproportionate environmental health or safety risk to children (E.O. 13045) |
| ***Social Conditions:*** Environmental Justice | ROI | Disproportionate environmental, economic, social, or health impacts on minority or low-income populations (E.O. 12898) |
| ***Economics*** | ROI | Exceedance of RTV[c] for socioeconomic indicators (modeled population, personal income, employment, and/or business activity that exceeds the difference between the maximum and average historical level over the past 19 years) |
| ***Transportation and Infrastructure*** | ROI and/or Installation Boundary | Decrease in Level-of-Service (LOS) of key installation arteries and collectors below the acceptable LOS D<br><br>Road failure resulting in rutting, cracking, or other pavement problems which requires substantial maintenance or rehabilitation activities<br><br>Violation of FAA regulation that undermines the safety of either commercial passengers or personnel at Alexandria International Airport/England Industrial Airpark<br>Impairment of Installation's ability to meet federally-mandated or Army objectives for waste minimization and pollution prevention<br>Exceedance of existing facility or system capacity for hazardous waste/hazardous material management, storage, disposal, or emergency response; water supply and sewage treatment; or utility services |
| ***General Compliance*** | Installation boundary or limits of affected environmental media | Violations of federal or state environmental rules, regulations, or permits held by the installation |

**Table 4.2–1**
**Thresholds of Concern[a]**

| Area of Concern | Spatial Boundary | Threshold of Concern: Proposed action would cause or result in[b] |
|---|---|---|

[a] Although some thresholds have been so designated based on legal or regulatory limits or requirements, others reflect discretionary judgment and best management practices on the part of the Army and Forest Service in accomplishing their primary missions of military readiness and management of National Forest lands (including multiple use and access), respectively, while also fulfilling their conservation stewardship responsibilities. Quantitative/qualitative analyses may be used, if appropriate, in determining whether, and the extent to which, a threshold is exceeded.

[b] Thresholds listed are for potential effects of the proposed action prior to or without mitigation.

[c] The methodology used to determine significant impacts for social and economic conditions is presented in the *Economic Impact Forecast System (EIFS) Users Reference Manual* (USACERL Technical Report TAA

## *4.3 RESOURCE EFFECTS NOT CONSIDERED FURTHER*

Thirteen resources covering all aspects of the physical environment and socioeconomic conditions were presented in Section 3.0, *Affected Environment.* Given the nature of the actions evaluated in this EA, as discussed in detail in Sections 1.0 and 2.0, all resources were analyzed with the exception of climate and geographic setting. Because none of the actions described in this EA occur at a scale that would warrant consideration of regional climate change or geographical setting, those resources were not considered further.

## *4.4 LAND USE*

### *4.4.1 No Action Alternative*

No new or additional effects would be expected. The Army would not establish a DMPBAC at Peason Ridge, and the training activities of home-stationed units and visiting brigades would continue to occur at existing Peason Ridge maneuver areas, drop zones, impact areas, and firing points. No changes to land use designations or land cover types would occur under the no action alternative. Peason Ridge would be maintained as it is, with no changes or improvements anticipated to occur to existing conditions other than those from the continuation of current operations or undertaken in the course of normal maintenance activities.

### *4.4.2 Proposed Action Alternative*

Long-term beneficial effects on installation land use and long-term direct minor adverse effects on land cover respectively would be expected. Overall, the primary land use at Peason Ridge in the vicinity of the proposed DMPBAC would not change. Military training activities of various types have occurred there in the past and will continue into the future. Beneficial effects would be expected because the DMPBAC would be constructed and operated in an area designated for military training and would alleviate some increased training intensity at other range facilities on the Main Post. No conflicts with other on-post land uses would occur, although the intensity of training activities would increase and new facilities would be constructed. The MIMs value prescribed for Peason Ridge would be anticipated to rise to about 116,000 miles (a 59 percent increase from current MIMs) upon initiation of operations at the DMPBAC.

Anticipated future training intensity levels projected by Fort Polk staff were analyzed. In the future, high-intensity training is expected to occur on 60 percent of Peason Ridge, up from 39 percent for current training levels, and the percentage of area used for moderate-intensity training is expected to increase from 18 to 34 percent. No areas of low-intensity training would remain in the future (Figure 4-1). The increased intensity of military activities would adversely affect existing land use/land cover through physical impacts on natural resources. Vegetation might be cleared or lost from repeated vehicle maneuvering over natural surfaces, and regrowth might not occur on bare ground areas without aid from management programs. Soil loss would also be expected to occur; see Section 4.5.2 for discussion of the effects of the proposed action on soil erosion rates and subsequent adaptive management and mitigation measures.

The JRTC and Fort Polk Real Property Master Plan (RPMP) outlines several land use-related goals for the installation (Morgan Consultants, Inc., 1996):

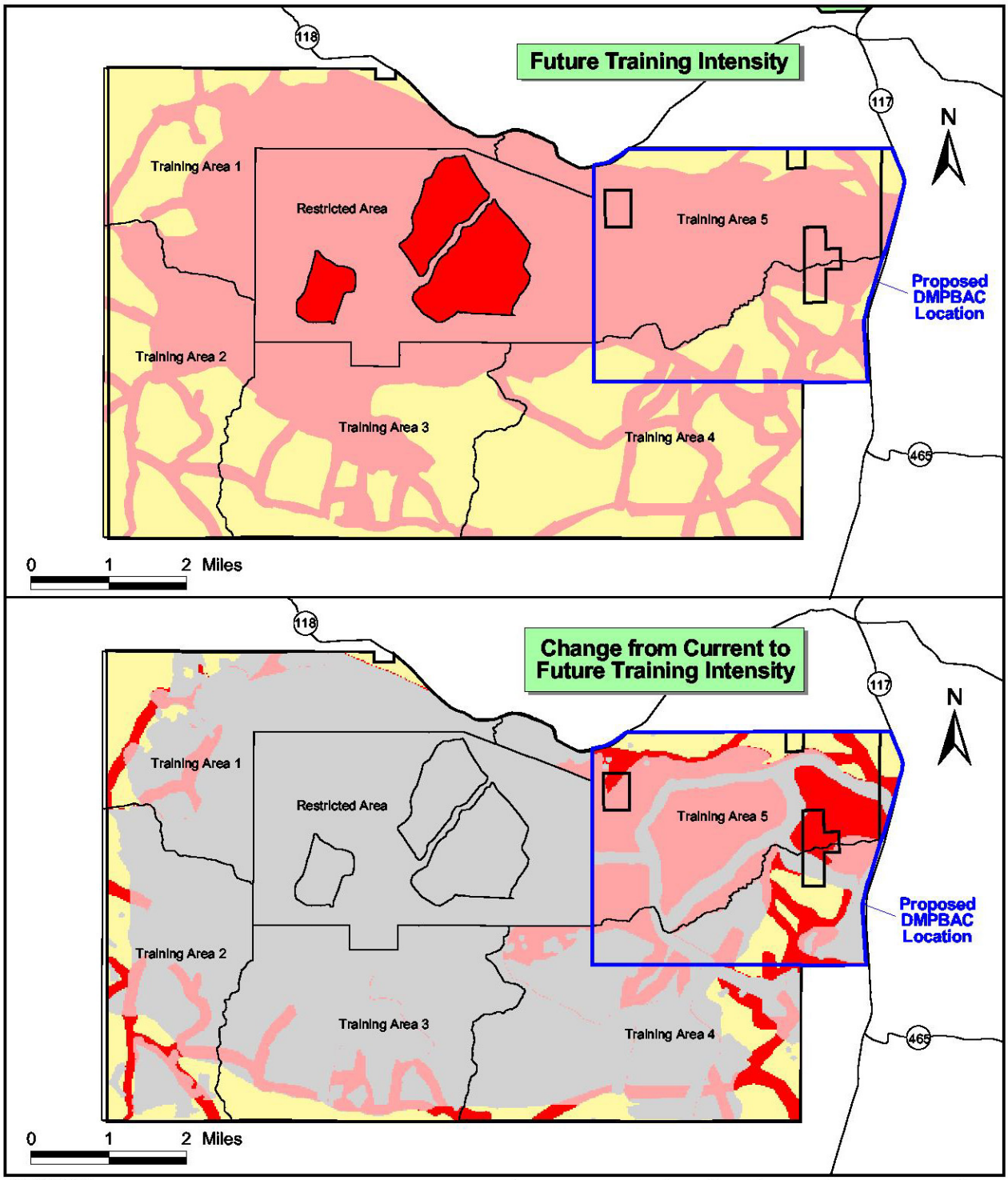
- Ensure that facilities and land uses are adaptable to and can expand to accommodate new missions, weapon systems, and training.
- Improve and restore the on-post natural environment in a manner consonant with effective military training and adherence to environmental guidance and laws.
- Develop and operate the installation in harmony with the surrounding community.

In terms of effects on land use/land cover, construction and operation of the DMPBAC is consistent with the first goal; however, adverse effects would be expected with respect to the second and third goals, as discussed below.

Long-term direct minor adverse effects on land cover would be expected from construction of the DMPBAC, which would entail development of the battle area course, complementary facilities (shoot house, breach facility, urban assault course, and two live-fire villages), five operations buildings, and 12 miles of new roads. Road construction (about 32 acres), tree-clearing (914 acres), and forest-thinning activities (2,285 acres) for maneuvering and line-of-sight firing would result in loss of natural land cover. Those activities would increase forest fragmentation by reducing the amount of land cover, although most of the cleared areas would retain a grassy cover, providing a measure of soil stability. About 179 of the 914 acres to be cleared would also be grubbed for building, facility, and road construction. Further discussion of the effects on specific vegetation types and BMPs and mitigation measures to counter the effects are discussed in Section 4.7.

Operation of the DMPBAC would result in land use incompatibility issues with the surrounding area off-post, and localized long-term moderate adverse effects on surrounding land use would be expected. Residents who live near the perimeter of Peason Ridge and the proposed DMPBAC could be subjected to noise annoyance during the day and night, as well as increased traffic associated with range operations. These activities could affect the property value of homes by reducing their resale value or their ability to be sold. Effects on property values are discussed further in Section 4.11.2.2, Housing.

Two of the proposed roads for the DMPBAC would go through one of the Forest Service parcels. Forest clearing and thinning would occur in the parcel as well. It is anticipated, however, that these parcels, currently permitted to the Army as military intensive use areas, will be transferred




***LEGEND***

**Top Panel: Projected Future Training Intensity**

- Moderate Training Intensity
- High Training Intensity
- Impact Area
- Training Area Boundary

**Bottom Panel: Change in Training Intensity**

- Low to Moderate
- Low to High
- Moderate to High
- No Change

Source: Fort Polk GIS, 2002.

# *Future Training Intensity*

**Figure 4-1**

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to Army ownership in a proposed land interchange as agreed to in principle in an MOU between the Army and Forest Service. If this interchange occurs as planned, long-term effects of the proposed action on Special Use Permits or conflicts with the Kisatchie National Forest Revised Land and Resource Management Plan would be negligible.

### *4.4.3 Cumulative Effects*

The spatial boundary for land use and land cover is the installation boundary. Therefore only actions occurring within the boundary of Peason Ridge will be addressed in this section.

Minor beneficial cumulative effects on land use would be expected at Peason Ridge. Beneficial effects would be expected to land use because use of the area for its primary designated purpose, military training, would be enhanced by the construction and operation of proposed action. Home station and rotational training on other portions of Peason would continue. Additionally, the installation would be able to support qualification on two separate ranges at the same time or the land area of the MPRC on main post would be available for use by rotational units while home station units trained on the DMBAC. Past military training activities at Peason Ridge do not present any further or additional environmental impacts when combined with those from the proposal. Past training activities have routinely received environmental preventative action and environmental stewardship measures to avoid or mitigate training impact before they occur, and inspection and corrective measures have been applied after training activities to reduce or repair impacts or damage resulting from training activities.

Minor adverse cumulative effects on land cover are expected at Peason Ridge. These cumulative effects result from the periodic land cover disturbances will be created by the continued field training exercises of home station and rotational units coupled with the land clearing and training activities for the DMPBAC. No other large-scale construction projects that would be expected to contribute to cumulative effects to land cover at Peason Ridge have been identified. The cumulative effects would be minor because the stewardship measures mentioned in section 4.4.4 below assist the installation in reestablishing cover on disturbed sites.

### *4.4.4 Best Management Practices and Environmental Stewardship*

Several management programs are in place at Peason Ridge and would continue to be applied to ongoing and future military activities with respect to land use/land cover. These programs aim to ensure sound environmental and natural resource management in terms of best land use management practices and land rehabilitation, and include Integrated Training Area Management (ITAM), real property management, compliance monitoring, and adaptive management. The ITAM program and its four subprograms–Land Condition Trend Analysis (LCTA), Land Rehabilitation and Maintenance (LRAM), Training Requirements Integration (TRI), and Environmental Awareness–establish procedures to achieve optimum, sustainable use of training lands by implementing a uniform land management program that includes inventorying and monitoring land conditions, integrating training requirements with land carrying capacity, educating land users to minimize adverse effects, and providing for training land rehabilitation and maintenance. Real property management includes development of an installation Real Property Master Plan and its short- and long-range components. Real property management identifies planning goals for the installation to achieve as it grows, primarily with respect to facility management. Compliance monitoring is conducted to determine whether military activities are resulting in unexpected or unacceptable effects on the natural or human environment. The adaptive management approach embraces the uncertainties of system

responses and attempts to structure management actions, including land use planning, based on lessons learned from previous experience. These programs would continue to minimize potential environmental effects on land use/land cover from ongoing military training activities and provide guidance for best long-term use and management of training areas at Peason Ridge.

## *4.5 GEOLOGY AND SOILS*

### *4.5.1 No Action Alternative*

No new or additional effects on geologic and topographic conditions, soils, mineral development, or prime farmland would be expected. Current conditions would not change under the no action alternative.

### *4.5.2 Proposed Action Alternative*

***Geology and Topography.*** Long-term minor localized adverse effects on topography would be expected as a result of the reshaping of land due to earthworks, borrow pits, and construction projects during construction of the DMPBAC. No new or additional effects on geology would be expected. The proposed action would not change subsurface geologic materials.

***Soils.*** Short-term moderate and long-term minor adverse effects would be expected from implementing the proposed action. Direct effects on soils would occur as a result of both construction and training activities at the DMPBAC.

In the short term, despite the construction of sediment retention ponds and the implementation of BMPs to control erosion, increased runoff and erosion would likely occur during facility construction as a result of removal of vegetation, exposure of erodible soils, and increased susceptibility to water and wind erosion. Activities related to the proposed action that are expected to disturb vegetation and expose bare soil include earthworks, roadway and assembly area construction, and the creation and use of borrow pits. Generally, effects on soils would be limited to those areas where earthwork and new construction are expected. Construction of permanent structures and sediment basins would have the long-term beneficial effect of stabilizing the soil due to the construction of a foundation. In the short-term, however, effects of construction activities would be expected to increase soil loss rates. Adverse effects on soils would be reduced by the use of appropriate BMPs for controlling runoff and erosion during and following construction. These measures include installation of silt fences, straw bale dikes, diversion ditches, channels, terraces, berms, riprap, gravel, water bars, water spreaders, and restoration/revegetation. These BMPs, in addition to the planned early construction of sediment retention basins, would lessen adverse effects.

Long-term minor adverse effects would be expected from clear-cutting and thinning of forested land. A substantial decrease in vegetative cover associated with DMPBAC construction would be expected to increase erosion. It should be noted that in the long term, vegetative cover would not be completely destroyed during thinning and even clear-cutting. In areas where the design plans call for vegetation to be cleared, the root structure would be left intact and grass would be planted to help to stabilize the soil. However, research indicates that approximately 10 years after a forest is clearcut any stability provided by the roots of removed trees is at a minimum. Landsliding is more possible and hydrologic effects would be accentuated at this time.

The planned increase in training intensity would also be expected to affect erosion rates. Some training activities, such as off-road vehicle maneuvering, would be expected to cause an increase

in erosion, rutting, and compaction of soils. Adverse effects would be minimized through sediment basin construction and the use of appropriate BMPs such as those cited above for controlling runoff, erosion, and sedimentation. The installation's comprehensive maneuver damage inspection and repair program, a component of the Army's ITAM program, would help to reduce the long-term effects of erosion.

Based on estimates obtained from the Army's ATTACC model (see Appendix E for ATTACC methodology), the expected future average soil loss rate for Peason Ridge Training Area 5, where the DMPBAC is proposed to be located, would be 6.34 tons per acre per year (t/ac/yr). ATTACC is the standard ITAM methodology for estimating training land carrying capacity by relating training load, land condition, and land condition practices (ENRMD, 2001). This amount is a 42 percent increase in soil loss from the current estimated rate of 4.48 t/ac/yr. Estimates of the annual loss of topsoil from undisturbed forest land ranges from .01 to .12 t/ac/yr (Pimentel et al., 1995). Erosion Status (ES) can also be used to represent the ATTACC model output of predicted soil loss. ES is the ratio of predicted soil loss rates to tolerable erosion rates. Figure 4-2 shows the ES for Peason Ridge Training Area 5. Any value above one indicates that in that area, erosion rates are expected to be higher than what is normally considered tolerable for that particular soil. Because of the uncertainties associated with the output of soil loss predictive models, the development and implementation of a monitoring and adaptive management program for soil loss associated with construction and use of the DMPBAC is strongly recommended.

A Storm Water Pollution Prevention Plan (SWPPP) would be prepared during the project design phase to provide erosion and sedimentation reduction guidelines. Fort Polk would design erosion control measures for the SWPPP based on particle size and other site-specific factors. The SWPPP would describe the use of the suggested BMPs and provide implementation procedures. Fort Polk has incorporated 40 sediment retention ponds into design specifications for the DMPBAC to limit the mobilization of lost soil downstream.

***Seismicity.*** No new or additional effects would be expected.

***Prime farmland.*** Minimal effects would be expected. Fort Polk has not been used for agriculture since the installation was established in 1941. Construction of the DMPBAC would involve no more than 15 non-contiguous acres, with no individual parcel larger than 2.8 acres, of soil types characterized as prime farmland. Given the small area of these soils that could possibly be adversely affected by construction of the DMPBAC, a Farmland Conversion Impact Rating form under the Farmland Protection Policy Act (FPPA) is not warranted.

### *4.5.3 Cumulative Effects*

Minor adverse cumulative effects on soils at the Peason Ridge training area, would be expected as a result of additional force on force training anticipated from the transformation of the second ACR and the participation of transformed units in JRTC rotations when combined with those of the proposed action throughout the training area. The effect on soil from the additional training will be minimal because even though training events may disturb soil and ground cover, allowing the soil to erode, the current installation practice of identifying and correcting damages to the soil and the cover that protect it will be applied to soil disturbances on the DMBAC. This inspection and repair program corrects damages before large amounts of soil can be displaced. In addition to training, past, present, and future activities that could contribute to erosion rates at the site location are timbering operations, and recreational uses such as hunting. Both of these activities temporarily expose soils. Timber harvest temporally denudes portions of the soil by directly removing the cover, the tree, and by scraping off the ground cover when moving the harvested

timber. Vehicular traffic during recreational use may also result in small areas of denuded soils. Both of these activities are short term disturbances. The timber harvest because the forest is either manually or naturally reseeded and the recreation disturbances because they are generally small enough that they heal naturally. Timber harvest is not anticipated in the future because the range will be maintained to inhibit forest encroachment. BMPs would be applied to the on-post construction projects to reduce soil loss during construction. In Peason Ridge, BMPs practiced by foresters could decrease overall soil erosion and subsequent sediment input into regional waterbodies. Due to the nature of effects on soils, only those activities that directly impact soil loss, compaction, or productivity on Peason Ridge are considered, and therefore the effects are minor.

#### *4.5.4 Best Management Practices and Environmental Stewardship*

Fort Polk practices stewardship programs to reduce erosion on areas where training occurs. These include the ITAM program, use of the ATTACC model, and adaptive management. The ITAM program at Fort Polk strives to achieve optimum, sustainable use of training lands by implementing a program that includes inventorying and monitoring land conditions, and integrating training requirements with land carrying capacity. The ITAM program and one of its subprograms, the LRAM program, would continue to monitor soil loss rates, identify problem areas, and install sediment basins in problem areas as necessary. The ATTACC model, along with land condition curve data, could be used for planning purposes as part of the ITAM program to identify problem areas before they occur, and the Army could react accordingly by reallocating MIMs to less intensively used training areas and closing sections of training areas for rehabilitation. The existing maneuver damage inspection and repair program provides an adaptive management procedure for identifying problem areas related to erosion after each rotation. Problem areas identified are recorded and are repaired using techniques such as reseeding of vegetation and installation of silt fences. Maintaining vegetative buffers around stream corridors is another management measure that Fort Polk practices. Although vegetative buffers do not prevent erosion from occurring, they help reduce sediment input into streams.

## *4.6 WATER RESOURCES*

### *4.6.1 Water Quality*

#### *4.6.1.1 No Action Alternative*

No new or additional effects would be expected on water quality. Home stationed units and visiting training units will continue training at Peason Ridge. No changes other than those from the continuation of current operations would take place. The current estimated annual average soil loss rate of approximately 4.5 t/ac/yr, attributable to training activities, calculated by the Army's ATTACC model, is expected to continue.

#### *4.6.1.2 Proposed Action Alternative*

##### *4.6.1.2.1 In-Stream Chemical Water Quality*

Direct and indirect short- and long-term minor adverse effects from toxic chemicals to in-stream water quality could occur under the proposed action alternative.

Intermittent temporary discharges from kitchen, shower and laundry units associated with the periodic military training activities could be a source of short-term minor adverse effects. Fort

Polk has management plans, including spill prevention plans, in place to minimize the effects of these discharges or spills.

Indirect long-term minor adverse effects from the transport of sediments contaminated by munitions compounds, their by-products and heavy metals to surface water could occur. Heavy metals that are associated with munitions and targets include lead, cadmium, chromium, copper, nickel, tin and zinc. Compounds associated with explosives include Royal Demolition Explosive (RDX), Her Majesty's Explosive (HDX), 2,4,6-trinitrotoluene (TNT), and perchlorate. With the exception of TNT, these compounds exhibit low water solubility but can adsorb to sediments to varying degrees, and therefore have the potential to be transported by storm events. The residual explosive constituents may leach into soil, surface runoff, surface waters and groundwater (Jenkins et al., 2001).

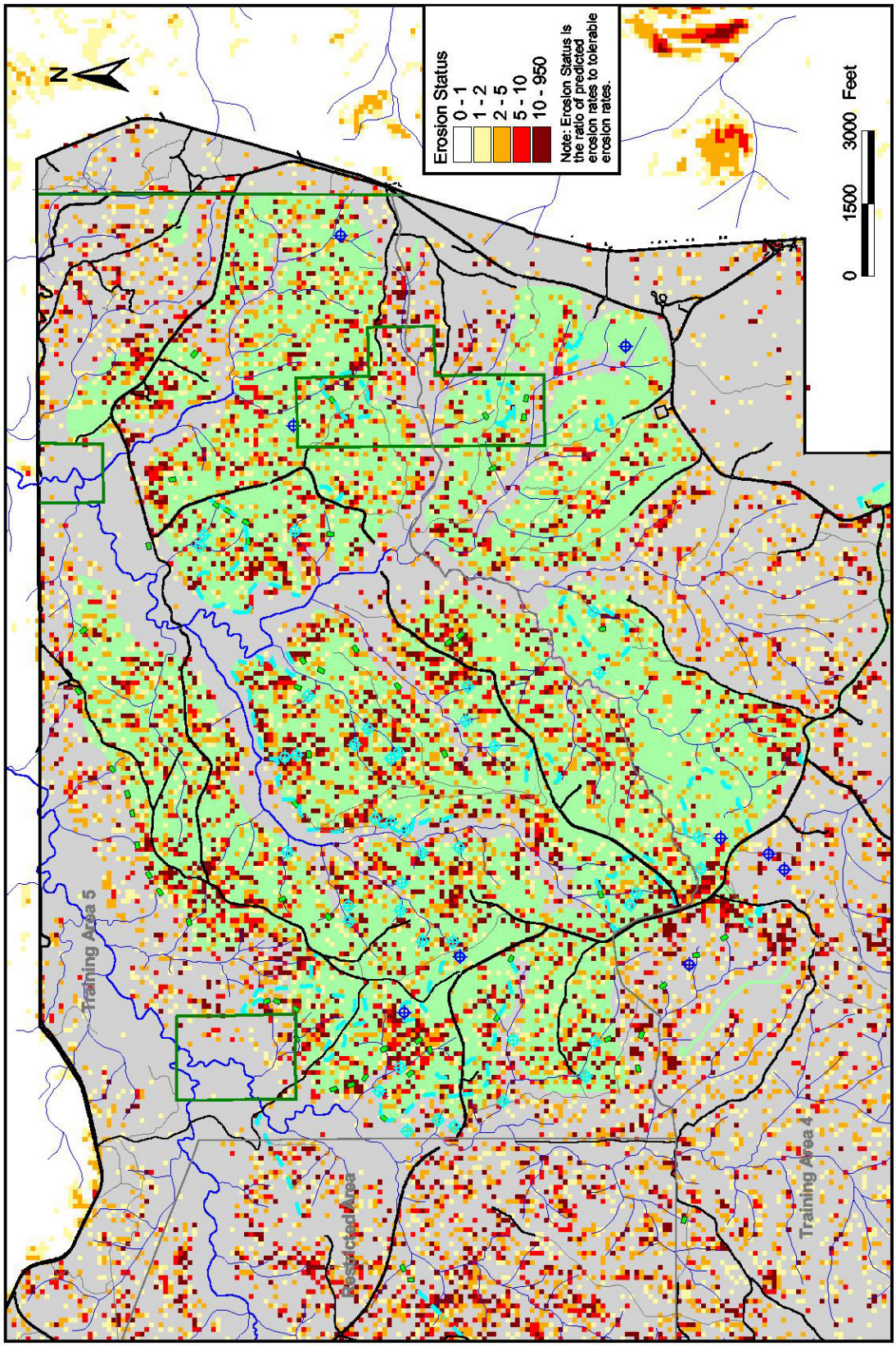
Upon explosion, explosives are decomposed into oxides of nitrogen, and oxides of carbon. During training, some munitions may not function as designed and remain unexploded. Unexploded ordinance (UXO) are a safety concern and therefore removed by EOD experts. Inert projectiles and UXO are periodically removed from the training area in order to prevent their decomposition and subsequent contamination of soils (DoD, 1996; USEPA, 1997).

RDX and HDX are highly effective explosive compounds and are found in a number of current weapon systems. RDX and HDX in the environment demonstrate negligible water solubility and do not chemically bind to most soils except clays. As the clay content of the soil increases, the adsorption increases. RDX and HDX undergo rapid photolysis into secondary products when exposed to sunlight and air or in shallow water. Chemical degradation takes place more slowly in soil. Given sufficient rainfall, residual nondegraded RDX, HDX and secondary products will move rapidly through soils and into groundwater (Jenkins et al., 2001; USCHPPM, 2001).

TNT is an effective explosive compound, long used in military weapon systems and in civilian commerce. TNT is inexpensive to produce, and when used in combination with other compounds to potentiate the explosive energy, generates major explosive damage. It has been in used in the military for decades, and has been employed at Fort Polk since the establishment of the installation. TNT is soluble in water, and degrades rapidly into by-products (including 2,4-DNT and 4,6-DNT) in air and water. TNT does not adsorb to most soils, and with rainfall moves rapidly through the soil column and into groundwater or is transported with stormwater (Lotufo et al., 2002; Jenkins et al., 2001).

Perchlorate is an oxidizing anion of ammonium, potassium, magnesium, and sodium salts. Ammonium and potassium perchlorate compounds have been used in a variety of munitions and pyrotechnics. Perchlorate is used in primers, fuses, and as a propellant oxidant in man portable self-propelled rockets. Due to its high solubility and chemical stability in water, it is highly mobile and persistent and with rainfall can move rapidly through the soil column and into groundwater or be transported with stormwater (DoD, 2002a; Jenkins et al., 2001).

Munitions that are more environmentally friendly, often referred to as "green," can reduce the impact of munitions. "Green munitions" include tungsten-based or rubber projectiles, lead free primers, and new explosives such as octanitrocubane. Under the Department of Defense's Operational Range Sustainment and Building the Military Munitions Response Programs, and the Army's Green Bullet Program utilization of "green munitions" will become more prevalent (DoD, 2002a; DoD, 2002b).




**Predicted Future Soil Loss Rates**

**Figure 4-2**

#### *4.6.1.2.2 Sedimentation to Streams and Riverine Habitat*

To facilitate the discussion of sedimentation of streams and riverine habitat the effects will be divided into activity groups.

Because of the highly erodible nature of the native soils and the potential for the proposed construction and training activities to increase soil disturbance, erosion and delivery of sediment to streams and riverine habitat in and around the Peason Ridge area is a water quality issue of concern. Whenever soil is disturbed by troop maneuvers such as driving vehicles over unimproved roads, open spaces or fording streams, entrenching activities, detonating explosive devises or construction activities, the potential for erosion or the transport of sediment exists.

Changes in land cover and alterations in topography from construction activities have the potential to change runoff, stream flow, and hydrology (Smoot and Smith, 1999). An increase in soil imperviousness will increase surface runoff, which will increase stream flow during storm events. Changes in topography may increase the power of overland and stream flows. An increase in slope will cause an increase in the velocity of stormwater thus increasing the potential for erosion (USEPA, n.d.). Stream erosion is a function of the magnitude and frequency of flow events; therefore increased surface runoff will contribute to streambank erosion. The transport of sediment to streams may change the hydrology of the stream through deposition of sediment (Smoot and Smith, 1999; USEPA, n.d.). Construction of stormwater retention ponds, buffer strips, water bars, and swales reduce the movement of stormwater into surface waters, which in turn reduces the effects to stream flow and hydrology. Stormwater management practices as outlined in Fort Polk's SWPPPs, ITAM and Watershed Management Plans are in place to minimize the adverse effects and limit the transport of sediment to surface waters.

***Construction***

Short-term disturbance during construction would increase sediment runoff during storm events resulting in a short-term moderate adverse effects. Proposed construction activities associated with the DMPBAC would increase the disturbance of soil in areas previously undisturbed. According to the *Kisatchie Creek Watershed Resource Management Plan* there are nine existing areas where suspended sediment and turbidity levels are elevated during storm events. The delivery of additional sediment to Bayou Kisatchie would contribute to the waterbody's impairment. Adverse effects would be minimized by the construction of sediment retention structures as defined in the DMPBAC project plans; and implementation BMPs as required by the NPDES stormwater permits. Sediment control structures identified in the project plans include sediment retention ponds (Figure 4-3) and silt fencing. BMPs are very site specific but can include the use of straw bale dikes, diversion ditches, buffer strips, swales and water bars. Sediment retention ponds, silt fences and these identified BMPs are an integral component of the DMPBAC project and would be in place prior to the start of land clearing and construction.

Sediment basins installed during construction and converted to stormwater management ponds can minimize sedimentation. A sediment basin is an impoundment usually constructed on the down slope of a hill or at the beginning of a drainage way. These water retention structures are designed to intercept, capture, and filter runoff by reducing water flow velocity and providing a retention time adequate to allow soil particles to settle out before the water exits the impoundment (ENRMD, 2001). The design specifications for the DMPBAC call for 40 site-specific sediment retention ponds (Table 4–6.1). Long Branch Creek watershed was identified in

the *2002 Kisatchie Creek Watershed Resource Management Plan* to have areas with erosion rates as great as100 t/ac/yr. Plans indicate 15 sediment basins are to be constructed within the Long Branch watershed. These retention ponds should capture the sediment before entering the streams and result in a long-term beneficial effect.

**Table 4.6–1**
**Number of Stream Crossings and Sediment Basins by Watershed**

| Receiving Water | Number of Stream Crossings | Number of Sediment Basins | Area of Concern Identified in Resource Management Plan |
|---|---|---|---|
| Long Branch Creek | 3 | 15 | Yes |
| Odom Creek | 7 | 15 | Yes |
| Reaugaulle Creek | 1 | 2 | No |
| Stagestand Creek | 3 | 7 | No |
| Tiger Creek | 2 | 0 | No |
| West Baygall Creek | 0 | 1 | No |

Source: Polyengineering, Inc., 2002; USDA, 2002.

**Figure 4–3. Example of Sediment Retention Pond or Basin.**

Direct short-term moderate adverse effects would be expected to occur to water quality due to the construction of the additional 10.62 miles of road; the removal of trees from 914 acres and the thinning of 2,285 acres of trees; earthwork construction and range maintenance activities through increased erosion. Effects from tree removal are further discussed in Section 4.7. These effects will be minimized by construction sequencing; having sediment basins in place before project construction, thinning or clear cutting begins; adherence to the SWPPP; and implementation of a range management plan. SWPPPs are required and have been prepared during the project design phase to provide erosion and sedimentation reductions. The many erosion mitigation measures that are included in the DMPBAC projects are reseeding areas of bare soil with vegetation; establishing buffer or vegetation strips around natural drainage paths; placing erosion mats along drainage paths; and layering mulch, gravel, or wood chips. A combination of BMPs, such as grading the disturbed land to direct stormwater flow to a vegetative filter strip, allows the vegetation to slow the flow of stormwater, allowing sediment to settle out, some water to infiltrate, and some pollutants to be removed (Center for Watershed Protection, 2000). Mulching disturbed areas during construction and consequent reseeding will reduce the area of bare soil available for sediment transport during rain events. Preserving as much of the natural vegetation as possible, preferably in vegetative buffers along streams, allows for a natural filtering process of the runoff before it reaches the streams.

Construction of the proposed stream crossings (Table 4–6.1) would result in localized short-term direct moderate adverse effects in the form of increased stream turbidity. Road ditches are designed to minimize sediment loading from erosion along the approaches to stream crossings and roadways.

The proposed arched and low-water stream crossings would result in long-term beneficial effects through hardening and protecting the streambanks and approaches. The stream crossings designed for the DMPBAC training roads, would permit floodwaters to flow unconstrained across the streams floodplain. Bridges and arched crossings are environmentally preferred because they cause the least disturbance to stream beds, banks and surrounding flood-plain; they provide the least obstruction to flow; and have the least erosion potential (Figure 4–4) (Flanagan and Furniss, 1997; Tollett, et al., 2002; Center for Watershed Protection, 2000). Arched bridges encourage fish passage and allow for natural deposition of sediments. Arched bridges are appropriate for use over streams with high bed loads. In order for the streams to maintain their floodplains, stream crossings must be large enough to convey bankfull and lower flow through a single opening and allow storm flow across the floodplain without constriction (USDA, 1997a; USDA, 1997b; Center for Watershed Protection, 2000).

**Figure 4–4. Example of Arched Crossing.**

A hardened bottom ford is proposed at one crossing. An example of a hardened bottom ford is shown in Figure 4–5. Although low-water hardened bottom fords create more erosion potential than bridge crossings, properly designed fords can successfully maintain natural stream flow and morphology as well as passage for fish and other aquatic life (Taylor et al., 1999). According to *Effects of Hardened Low-Water Crossings on Stream Habitat, Water Quality and Periphyton in Four Streams at the Fort Polk Military Reservation, Vernon Parish, Louisiana, October 1998 through November 1999* completed by USGS in 2002, there was virtually no noticeable difference in surface water quality above and below low water crossings (Tollett et al., 2002). The only exception was that the pH measured at one crossing was lower upstream than downstream of the crossing. To increase effectiveness and achieve a more natural stream channel, a low-water crossing should be depressed, meaning their bottoms should be buried below the natural streambed (USDA, 1997a; USDA, 1997b). Depressed crossings or fords allow water to flow and sediments to deposit as they would naturally. The more natural crossing encourages fish passage. The hardened bottom areas will have less of an effect on natural flow regimes and sediment transport because water would be allowed to overtop the structure and access floodplains more easily (USDA, 1997a; USDA, 1997b). Depressed fords are more self-maintaining because storm flows are able to wash out any deposited sediments and debris (Center for Watershed Protection, 2000).

Short-term localized moderate adverse effects would be expected due to resuspension of sediment when vehicles ford streams using hardened low-water stream crossings.


**Figure 4–5. Example of Low Water Crossing or Ford.**

***Training Activities***

Increased training intensity under the proposed action would result in long-term minor adverse effects to water quality. As discussed in Section 4.5.2, the expected future average soil loss rate for the location of the proposed DMPBAC represents a 42 percent increase from current conditions. There is an inherent uncertainty in predicting level of effects, due to sediment retention pond efficiency, actual number of vehicle operations, and MIMs distribution, and that the model predicted loads denote soil that is available for transport but does not equate to in-stream sediment concentrations.

### *4.6.1.3 Cumulative Effects*

The spatial boundary for surface water quality is subwatershed and the designated stream segment within the installation boundary. Therefore only actions occurring within the subwatershed, since it is the applicable parameter of the two mentioned above, will be addressed in this section. Within the footprint of the proposed project these subwatersheds include Sandy-Odem Creek and Comrade Creek.

Cumulative moderate long term adverse effects on water quality are expected. Long-term minor adverse effects on water quality would result from DMPBAC construction and training activities. Long-term minor adverse effects on water quality would also result from timber harvesting and recreational activities such as using dirt bikes and all-terrain vehicles are activities within the above mentioned watersheds contribute to soil erosion and increased siltation within the surrounding streams. Because of the low population density and the land use, timber production, in the portions of these subwatersheds outside the installation boundary, no other past, present, or foreseeable future actions were identified. The Army's ATTACC model, whose domain includes

the watersheds surrounding Peason Ridge, was used to quantify the soil loss outside Peason Ridge. Those watersheds with established forests were predicted to have a soil loss over the next 10 to 20 years in the range of 2-3 t/ac/yr, similar to many of the forested watersheds on Peason Ridge. The majority of the land surrounding Peason Ridge is used for timber production. It can be assumed that the timber industry will continue to remove timber from their land. However, this process is usually a short term impact because areas from which timber is harvested are replanted to once again produce timber. Through these reforestation efforts vegetation cover is present on surrounding land the majority of the time and it can be assumed 2-3 t/ac/yr mention above will be the normal condition. Therefore when surrounding timber harvest, construction and operation of the DMBAC, and anticipated future training from JRTC and home station units are cumulatively added together, moderate long term cumulative effects are expected.

#### *4.6.1.4 Best Management Practices and Environmental Stewardship*

Stewardship and adaptive management practices will continue to be used and will continue to lessen the effects of training on the environment. Through the implementation of the water resource management program, the installation uses a holistic approach that includes pollution prevention methods such as adaptive management practices and watershed protection plans that include SWPPPs. The Army requires four major elements in the SWPPP: assessment of regulated and unregulated facilities, a Storm Team for oversight, a training curriculum, and an evaluation and monitoring system to gauge performance. The Peason Ridge Sewage Treatment Facility is a regulated facility that is assessed for pollution potential. The Storm Team includes the Environmental Engineer from the Environmental and Natural Resources Management Division of Fort Polk as the Executive Chair, with program assistance from the U.S. Geological Survey (USGS). The evaluation and monitoring system changes continually as new and more effective methods are found.

Soldiers and leaders are instructed in environmental stewardship. Fort Polk's training policy includes the following:

- Refill all excavations.
- Collect shell casings from expended ammunition, and collect wire and litter.
- Burning or burning waste is prohibited.
- Return all waste to approved collection sites.
- Cross streams at authorized points only.
- Avoid destroying vegetation.
- Stay on established trails during movement to training areas.
- Steer clear of vegetation.
- Avoid driving on road shoulders.

Adhering to the training policy will reduce the effects associated with training activities.

The Forest Service has recommended that 50-foot riparian buffer zones be maintained during forest harvesting, where possible. The purpose of the buffer zone is to maintain natural vegetative cover around the stream, which in turn maintains the natural temperature of the surface water and acts as a filter protecting the stream from sedimentation. Additional in-stream

monitoring for total suspended solids, turbidity, DO, temperature, metals, and total nitrogen during base flow periods and storm events could be used to determine the effectiveness of the sediment control practices used on Peason Ridge.

### *4.6.2 Groundwater*

#### *4.6.2.1 No Action Alternative*

Under the no action alternative, no adverse effects on groundwater quality relative to baseline conditions would be expected. Currently, groundwater quality is maintained through various pollution prevention programs, as well as treatment and control of discharges through valid state and federal permits. All sanitary sewage is treated on-site and discharged to nearby creeks under an LDEQ permit. Improperly functioning UST systems and oil/water separators are being identified, checked for leaks, and in some cases closed. The installation prepared an Oil and Hazardous Substance Contingency Plan, dated March 1992, and is currently preparing an updated version. Groundwater contamination to off-post sources has been very minor because the installation maintains strict spill recovery procedures in accordance with federal and state regulations. In addition, the groundwater recharge outcrop is protected and very little activity takes place there.

#### *4.6.2.2 Proposed Action Alternative*

Long-term minor direct and indirect effects, both minor adverse effects, and minor, long-term direct beneficial effects would be expected during construction.

Under the proposed action, there would be the potential to cause short-term environmental contamination due to fuel and hazardous materials spills that could occur during construction. However, construction contractors and employees would be required to conduct BMPs and follow Fort Polk's Oil and Hazardous Substance Contingency Plan, and Hazardous Material Management Plan. Small fuel tanks at construction sites would be required to have spill containment features to avoid soil contamination. Construction sites will be required to provide control over solvents, and other chemicals, avoiding spills to soils.

The volume of groundwater withdrawn as a result of the proposed action may increase. However, the effects would be negligible because sufficient groundwater reserves are available.

The use of munitions at the DMPBAC will release explosive constituents and generate low order detonations and UXO. There is a potential for fewer net negative effects on groundwater from the DMPBAC if the weapon systems employed use new generation propellants, explosives, and fuses and more environmentally responsible sustainability procedures. These beneficial effects would be offset by continued use of currently fielded systems, explosives, and other chemical compounds.

Under the proposed action, there is a potential for minor long-term effects to groundwater. The artillery used has the potential to contaminate the groundwater if UXO is left on the ranges and training areas for long periods of time. Munitions left in the ground over long periods of time provide the opportunity for metals and organic compounds to leak into the soil and eventually the groundwater. Common management practices at military ranges involve sweeping the areas periodically to dispose of any UXO. This practice prevents the leakage of explosives and

propellant compounds from the weapon and thus prevents ground contamination. Small weapons ammunition left on the ground for long periods of time could result in ground contamination with lead, arsenic, cadmium and other heavy metals. Present practices at military ranges employ periodic sweeping of the areas to remove such objects to prevent soil and ground contamination.

Perchlorates are commonly used in charges and detonation devices. Perchlorates are extremely soluble in water. Unexploded or misfired artillery has the potential to contaminate the soil and eventually the groundwater with perchlorates if these devices are left out on the range for long periods of time. BMPs for ranges involve sweeping the areas for UXO and fragmented munitions to periodically remove the items that have the potential contaminate the soil.

Pyrotechnics, obscurants and fog oil have the potential to contaminate the soil and eventually the groundwater from fallout of chemicals or as particulate matter. Some of the components of these items fallout as inorganic compounds such as barium nitrate and particulate matter which is composed of moisture droplets impregnated with organic oil substances. The quantities of these by-products are in the microgram range and should not be of sufficient mass to cause the groundwater sufficiently to exceed federal or state MCL standards.

#### *4.6.2.3 Cumulative Effects*

Minor adverse cumulative effects to groundwater withdrawals could occur in the region over the next 10 to 20 years because of nonmilitary growth and encroachment activities, leading to an increased use of groundwater resources that are not currently being widely utilized in the vicinity.

Fort Polk and other DoD activities are likely the only sources in the ROI with a substantial amount of explosive constituent compounds released into the environment. No non-military sources are likely to contribute to regional cumulative effects through explosive constituent contaminants. Implementation of the proposed action would increase live-fire training, and as a result minor increases in residual explosive compounds would occur. These sources would be cumulative with the existing contaminant load, which is present due to the use of ranges on Peason Ridge for the last five decades, on the live-fire ranges and, therefore, a minor adverse local and regional cumulative effect would be anticipated. These effects would be minor because as mentioned in section 3.6.2.2 castor creek confining unit could prevent or retard the movement of any contaminants and to date there is no evidence the contaminant load has contributed to degraded ground water quality.

The DoD continues to evolve its concept of range sustainability. It is reasonably foreseeable that the proposed DMPBAC would be required to meet range sustainability requirements. These could include surface clearance, range renovation, maintenance of detailed unit and munitions use records, and real-time monitoring for certain chemicals. Overall, these could have a positive beneficial effect on groundwater resources through more routine and more robust monitoring of soils, water, and groundwater.

#### *4.6.2.4 Best Management Practices and Environmental Stewardship*

BMPs and enforcement of Fort Polk's Management Plans for hazardous material, range clearance, and spill contingency plans would minimize any potential contamination of groundwater resulting from training activities. BMPs related to range sustainability, as well as the use of "green" artillery and ammunition, would minimize any potential threat of groundwater contamination.

Existing groundwater monitoring programs would continue as required. Currently, groundwater quality is maintained through various pollution prevention programs as well as treatment and control of discharges through valid state and federal permits. All sanitary sewage is treated on-site and discharged to nearby creeks under an LDEQ permit. Improperly functioning UST systems and oil/water separators are being identified, checked for leaks, and in some cases closed. The installation prepared an Oil and Hazardous Substance Contingency Plan, dated March 1992, and is currently preparing an updated version.

## *4.7 BIOLOGICAL RESOURCES*

### *4.7.1 No Action Alternative*

No new or additional effects on biological resources would be expected under the no action alternative. Current conditions would not change.

### *4.7.2 Proposed Action Alternative*

#### *4.7.2.1 Vegetation*

Short- and long-term moderate adverse effects on vegetation would be expected from implementing the proposed action. The DMPBAC construction and operation would result in the permanent conversion of 914 predominately forested acres of Peason Ridge. Permanent conversion of 914 acres of forest would represent a net loss of approximately 3.8 percent of the total forested acreage (24,169 acres) at Peason Ridge. This figure is less than the threshold of concern shown in Table 4.2–1 and would be considered a moderate loss of forestland on a landscape scale.

Project specifications also call for an additional 2,285 acres of forest to be thinned to approximately 20 trees per acre to create lines of sight between firing points and objectives (Table 4.7–1). Thinning standards would comply with RCW guidelines. Large-diameter, high-quality trees (especially longleaf pine) would be retained where feasible. All snags and cavity trees would be retained unless they are in the path of construction. The target basal area for thinning is 40 square feet per acre; a basal area of 40 to 60 square feet per acre is optimal for RCW habitat and would mimic the historic ecosystem of the area.

Timber harvest occurs regularly on Peason Ridge, with an average of 552 acres of timber harvested yearly. Under normal timber management, harvested stands are replanted or allowed to regenerate naturally. Forests cleared for the DMPBAC, however, would not be allowed to regenerate during the estimated 20-year life span of the range. Cutting and thinning a total of 3,199 acres at the Peason Ridge training area for the DMPBAC represents approximately a six-fold increase in average annual timber operations at Peason Ridge.

**Table 4.7–1**
**Vegetation Types To Be Thinned And Cleared At Peason Ridge**

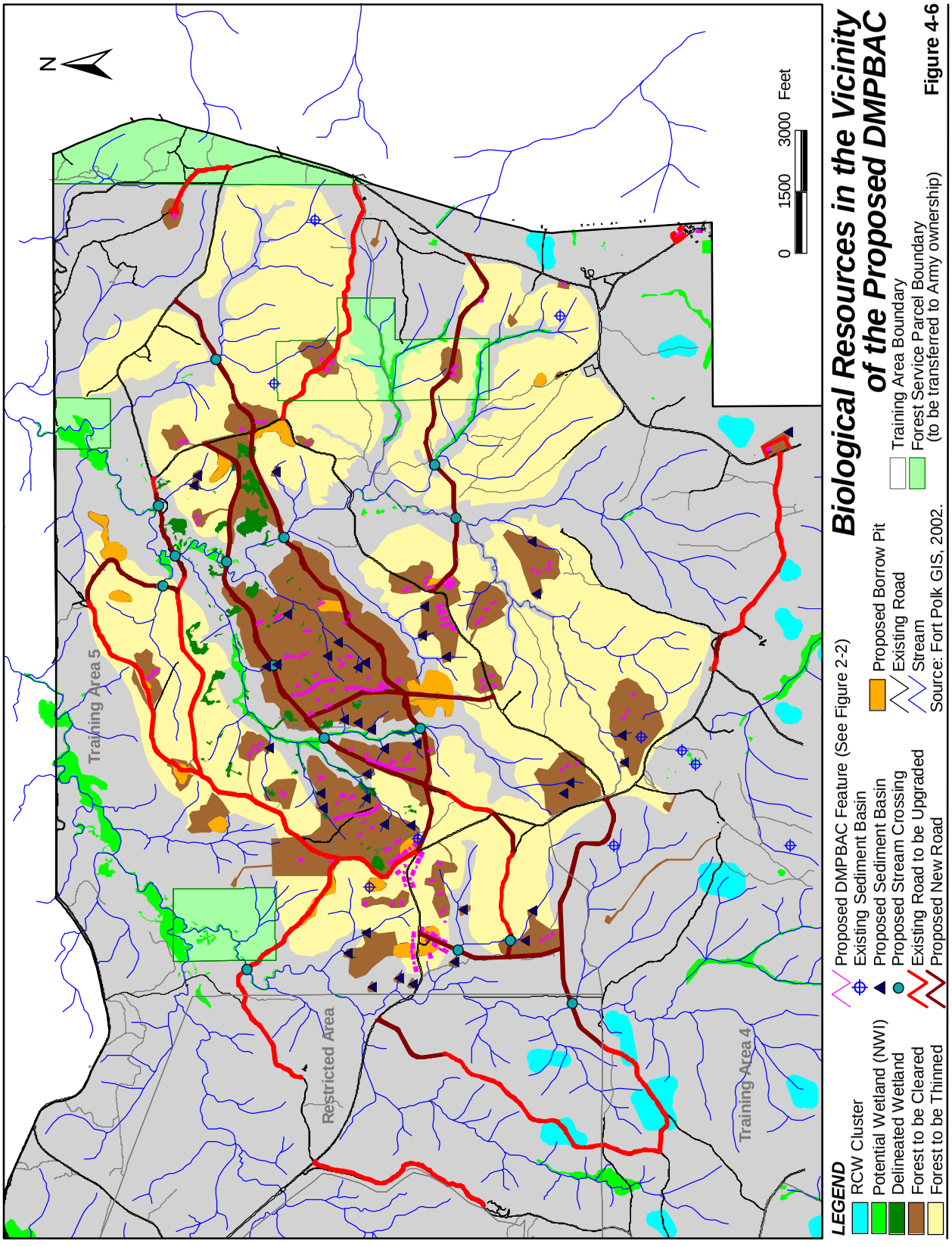
| | Forest Clearing | | Forest Thinning | |
|---|---|---|---|---|
| | **Acres** | **Percent** | **Acres** | **Percent** |
| Nonvegetated Urban | - | 0% | - | 0% |
| Vegetated Urban | - | 0% | - | 0% |
| Deciduous/Mixed Forest | 174 | 19% | 480 | 21% |
| Coniferous Forest | 521 | 57% | 1,302 | 57% |
| Forested Wetland | 9 | 1% | 68.5 | 3% |
| Emergent Wetland | - | 0% | - | 0% |
| Scrub/Shrub | 183 | 20% | 343 | 15% |
| Grasses | 18 | 2% | 68.5 | 3% |
| Water | 9 | 1% | 23 | 1% |
| **TOTAL** | **914** | **100%** | **2,285** | **100%** |

Source: URS Corporation, 2002a.

Long-term direct minor adverse effects on vegetation would be expected from DMPBAC operation. Off-road travel during the growing season would be expected to cause trampling of vegetation and soil compaction in areas with frequent off-road traffic that could slow natural revegetation and gradually eliminate forest understory plants intolerant of heavy traffic. Herbaceous, shallow-rooted plants more tolerant of disturbance could become more prevalent in frequently used areas.

Long- and short-term direct minor adverse effects on vegetation would be expected from DMPBAC construction (Figure 4-6). When new roads are built, old roads improved, or buildings constructed, some vegetation would be expected to be destroyed. Current design specifications call for 10.62 miles of new roads to be constructed within the DMPBAC.

By multiplying the DMPBAC design average road width of 22 feet by 10.62 miles of road, it is estimated that DMPBAC roads would account for the loss of approximately 28.32 total acres of vegetation. Table 4.7–2 lists the acreage of natural vegetation potentially lost because of construction of targets and other facilities. Not all vegetation losses would be expected to be long-term. Vegetation would initially be cleared from sediment basins during construction, but the basins would be expected to regain vegetation after construction. The 131.20 acres of vegetation proposed for loss to roadways and buildings would not be considered a separate impact on forests on a landscape scale because construction would occur mainly in previously disturbed areas or in the 914 acres to be clear-cut.




**Biological Resources in the Vicinity of the Proposed DMPBAC**

**Figure 4-6**

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**Table 4.7–2**
**Vegetation Lost to DMPBAC Development**

| Range Component | Calculation | Acres |
|---|---|---|
| New Roads | 10.62 miles x 22 ft wide | 28.32 |
| Borrow Pits | 13 pits | 76.90 |
| Sediment Basins | 41 basins x 0.20 acres each | 8.20 |
| Infantry Targets | 46 targets x 0.12 acres each | 5.52 |
| Stationary Armor Targets | 43 targets x 0.02 acres each | 0.86 |
| Moving Armor Targets | 8 targets x 0.84 acres each | 6.72 |
| Shoot House | | 0.10 |
| Control Building | | 0.08 |
| AAR Building | | 0.13 |
| AAR Building Parking Lot | | 3.36 |
| Battery Storage Building | | 0.09 |
| Maintenance Building | | 0.03 |
| Maintenance Yard | | 0.89 |
| | **TOTAL** | **131.20 acres** |

Source: Polyengineering, Inc., 2002.

#### *4.7.2.2 Forest Management*

No new or additional effects on forest management would be expected. There would be increased access for Forest Service management to the three KNF inholdings at Peason Ridge during construction of the DMPBAC. These inholdings will be transferred to the Army within the next 3 years. Army use of KNF lands is authorized under the Special Use Permit (SUP). Paragraph 48 of the SUP contains guidelines for tree damage and removal: "The Army shall contact the Forest Service whenever timber is planned for removal from National Forest Service lands and the Forest Service in coordination with the Army will then determine the method of disposal" (USFS, 1991). Coordination between the Forest Service and Army would be expected to allow for proposed clear-cutting and thinning of timber on KNF lands without violating the SUP or management prescriptions in the Kisatchie Forest Management Plan. After the land transfer is complete, these lands will no longer be managed under the guidelines in the Forest Management Plan (KNF, 1999).

#### *4.7.2.3 Wildlife*

Long-term minor adverse effects on wildlife would be expected. Short-term moderate adverse effects on wildlife would be expected during the construction phase of the project. However, adverse effects on wildlife from construction would be offset by long-term benefits from creating 2,285 of open canopy forest and 914 acres of frequently disturbed, low-quality grassland. Forest clearing would adversely affect species that require forest habitat but would have minor benefits to grassland species such as northern bobwhite, Henslow's sparrow, LeConte's sparrow, hawks, and many other species. Wildlife adjust to training, as evidenced by bird populations in the MPRC, which supports all these species, including RCWs (Moore, personal communication, 2003).

As discussed above, approximately 131 acres of wildlife habitat could be lost or permanently diminished in quality during DMPBAC construction. Most bird and mammal species would be

expected to escape direct adverse effects of construction, but less mobile species like amphibians would be expected to be lost. Initially, moderate adverse short-term behavioral and habitat disturbances for shrub-, tree- and cavity-dwelling mammal and bird species would occur as individuals become habituated to DMPBAC operations or leave the area. Long-term minor benefits on wildlife that thrive in edge habitat, such as white-tailed deer, would be expected because clearcuts and thinning would create edge habitat. During DMPBAC operation, short-term direct adverse effects on wildlife, such as injury or mortality from roadkill and trampling, could occur. Small increases in game species populations could occur because hunting opportunity would likely decrease while the DMPBAC is in use. During live-fire training, Impact Area SDZ would require both the eastern and western sides of Peason Ridge to be off-limits to recreation.

No short-term direct effects on periphyton (aquatic algae) would be expected from installing 12 arch culverts (bridges) and 2 box culverts in the DMPBAC. A recent study by the USGS and the JRTC and Fort Polk observed no change in the periphyton community structure before and within a year after construction of several stream crossings in the eastern portion of the IUA (USGS, 2002b). Because periphyton are sensitive to changes in water chemistry and stream morphology, they are useful for monitoring the effects of anthropogenic activities on surface water resources and aquatic wildlife habitat. Because no effects on periphyton were observed in the study, short-term adverse effects on other aquatic life from installing DMPBAC stream crossings would not be expected. Effects on aquatic life from construction and operation of other DMPBAC components would depend on the effects of military training on water quality and soils in the watershed, which are discussed in Sections 4.5 and Section 4.6 above.

#### *4.7.2.4 Management Indicator Species*

Short-term direct minor adverse effects on longleaf pine MIS would be expected in 204 acres of Forest Service inholdings at Peason Ridge. Longleaf pine MIS would lose forested habitat to DMPBAC clearing (22.7 acres), target construction (0.40 acres), and new road construction (0.85 acres). Also, 0.93 miles of existing road traversing Forest Service inholdings would be resurfaced and upgraded. Benefits would be expected to longleaf pine MIS from thinning 107.6 acres of timber in Forest Service inholdings to 40 $ft^2$ per acre of mature pine trees because plant and animal longleaf pine MIS prefer open-canopy forests. No direct effects on small stream riparian MIS, swift-flowing aquatic MIS, and slow-flowing aquatic MIS would be expected because no roads, targets, or stream crossings would be constructed in riparian habitats or streams on Forest Service inholdings. The MIS monitoring and management programs will cease on the 204 acres of inholdings once Forest Service lands are transferred to the Army. No long-term effects on MIS from DMPBAC training are expected because land transfer (ending MIS management) would be expected to be complete before the DMPBAC becomes operational.

#### *4.7.2.5 Federally Endangered, Former Candidate, Sensitive, and Conservation Species*

***Red-cockaded Woodpecker.*** Long-term indirect minor benefits to the RCW would be expected because timber thinning operations would create habitat suitable for RCW nesting and foraging. There are no RCWs in the DMPBAC because existing forested habitat in the DMPBAC footprint is too dense to be suitable for the RCW. Thinning 2,285 acres of mature timber would create suitable habitat for the RCW and other species like the Bachman's sparrow that prefer open pine stands (Moore, personal communication, 2003). Although existing RCW clusters at Peason Ridge are removed from where most DMPBAC construction and training would occur, three RCW clusters (BZ-H, BZ-D, and BZ-E) are bisected by existing roads that have been proposed for upgrade to support maintenance activities (Figure 4-6). No adverse effects on RCW clusters would be expected if a limited number of longleaf pine trees were removed to build or upgrade

roads because the JRTC and Fort Polk remove trees in RCW clusters every year during timber harvesting operations (Moore, personal communication, 2003). Construction within 200 feet of a RCW cavity tree would not occur between April through the end of July, which is nesting season for the RCW. The JRTC and Fort Polk have been building roads in and around RCW clusters for the past 10 years, and no adverse effects have been observed (Moore, personal communication, 2003).

Although older growth pine trees are required for natural cavity excavation, the creation of artificial nesting and roosting cavities is a common management practice across many managed RCW populations. This practice allows managers to eliminate the constraints of tree age and increases the availability of potential cavity trees. Fort Polk personnel regularly install artificial cavities to ensure that all known birds in the Fort Polk and Peason Ridge population have access to a cavity. Additionally, when existing cavities become unattractive or unusable to the RCW, new cavities can be installed in a matter of minutes with minimal disturbance and cost. The RCW breeding season (April 1 through July 31) would be the most sensitive time period for the birds (Basham-Wagner, personal communication, 2003). To minimize breeding season disturbance, planned thinning activities that could affect the RCW would occur outside of this time period. Planned thinning would complement the Army's and Forest Service's efforts to link the Peason Ridge RCW population with other RCW populations on adjacent KNF lands (Stephens, personal communication, 2003). New RCW clusters that establish in the DMPBAC would be managed as supplemental clusters under the Fort Polk Endangered Species Management Plan.

No new or additional effects from noise on RCW breeding and foraging would be expected during live-fire training. One recent study found that military training noise had no effect on RCW nesting success or productivity (Delaney et al., 2001). Birds and wildlife located on Peason Ridge are accustomed to loud noises because Peason has been used for many years as a live-fire complex (Moore, personal communication, 2003). Expected traffic volume on DMPBAC roads would be comparable to that occurring on other areas of the installation, where no effects on RCWs have been observed. Therefore, there are no anticipated effects on the RCW from increased traffic volume on improved DMPBAC roads (Moore, personal communication, 2003).

***Louisiana Pine Snake.*** Long-term indirect minor benefits to the Louisiana pine snake would be expected. Approximately 95 percent of the DMPBAC is marginal pine snake habitat. All Louisiana pine snakes found on Peason Ridge and Fort Polk have been found in open longleaf forest. Only about 5 percent of the DMPAC is open longleaf forest (Moore, personal communication, 2003). Initial site preparation such as grubbing and excavation, plus new road construction, could have initial adverse effects on ground-dwelling species like the Louisiana pine snake. When completed, however, the habitat alterations might likely be preferred by the Louisiana pine snake. All 16 Louisiana pine snake locations on Fort Polk and Peason Ridge have been near or on roads in heavily trained areas (Melder, personal communication, 2003). Current understanding of Louisiana pine snake behavior indicates this species prefers burned and thinned (sometimes cleared) habitat frequently associated with training on large military ranges.

***Sensitive and Conservation Species.*** Short-term direct minor adverse effects on USFS Sensitive or Conservation Species would be expected in 204 acres of Forest Service inholdings at Peason Ridge. Effects of DMPBAC construction on Sensitive or Conservation plants, mammals, birds, and reptiles occurring in upland pine forest habitats would be similar to the effects to Longleaf Pine MIS described in Section 4.7.2.4. No direct effects to Sensitive or Conservation plants, mammals, birds, reptiles, amphibians, fish, mussels, or crayfish occurring in riparian hardwood or

small-stream aquatic habitats would be expected because no roads, targets, or stream crossings would be constructed in riparian habitats or streams on Forest Service inholdings. Sensitive and Conservation species management programs will cease on the 204 acres of inholdings once Forest Service lands are transferred to the Army. No long-term effects on Sensitive or Conservation species from DMPBAC training are expected because land transfer would be expected to be complete before or shortly after the DMPBAC becomes operational.

#### *4.7.2.6 Wetlands*

Short- and long-term localized moderate adverse effects on wetlands would be expected from constructing eight stream crossings, four sediment basins, one mobile armor target, and carrying out timber thinning and clearing in or adjacent to wetlands (Figure 4-6). According to recent project design wetland delineations, there are 19.0 acres of wetlands in areas to be cleared, and 10.0 acres of wetlands in areas to be thinned. There are also 1,049.9 feet of roads that are planned for new construction or improvement in wetlands (Figure 4–6). Assuming an average road width of 22 feet, an estimated 0.5 acres of wetlands could be filled for stream crossings and approaches. Because DMPBAC sediment basin designs are pending, the exact wetland acreage that could be lost is unknown. In a similar action, the average acreage of wetlands to be filled for 21 stream crossings planned in the Vernon Unit IUA is 0.18 acre per crossing (URS, 2002a). Because wetlands and floodplains associated with Peason Ridge streams are generally not as wide as stream channels farther to the south in the IUA, wetland fill would be expected to be less than 0.18 acre per crossing. Therefore, assuming the average fill of 0.10 acre of wetlands for each of the four sediment basins and one mobile armor target, adverse effects could be expected to an estimated 0.5 additional acre of wetlands. In total, DMPBAC construction could result in long-term adverse effects from fill in 1.0 acre of wetlands, and short-term adverse effects from timber operations in 29.0 acres of wetlands. Effects would be significant if unmitigated net losses of wetlands were associated with construction of low-water crossings, sediment basins, and targets (Table 4.2–1).

Both sediment basins and low-water crossings would be subject to permitting by the Corps of Engineers under Section 404 of the Clean Water Act because construction would occur in wetlands or jurisdictional waterways. Jurisdictional wetland delineations would be required if wetlands might be disturbed. Based on delineation, wetland mitigation would be expected to be incorporated into Section 404 permits. With appropriate wetland mitigation, there would be no net loss of wetlands, and adverse effects would not be significant. Sediment basins would be expected to support small pockets of low-quality wetland vegetation, which would not be regulated as jurisdictional wetlands. Although some long-term benefits would be expected because low-water crossings and sediment basins would reduce the risk of stream sedimentation and protect downstream water quality and wetlands, these water quality safeguards would be achieved only after the loss of wetland and floodplain habitat to construct low-water crossings and sediment basins.

Direct short-term negligible adverse effects on wetlands would be expected from moving an estimated 1,450,000 cubic yards of dirt to create roads, targets, and other DMPBAC facilities. Despite the planned construction of sediment basins before timber removal or construction, some sedimentation in wetlands would be expected from the movement of over a million cubic yards of soil within the project area. See Sections 4.5, Soils, and 4.6, Water Resources, for further discussion concerning soil erosion and sedimentation effects. Indirect minor adverse effects would be expected from sedimentation in wetlands from soil eroded by vehicles operating on

unimproved roads and traveling cross-country. The heads of some drainages at Peason Ridge are likely to support baygall wetland vegetation, which could be adversely affected by accelerated rates of sedimentation. Conformance with training standard operating procedures (SOPs) would be expected to reduce direct adverse effects on wetlands. Under the SOP for JRTC rotational training, if a vehicle becomes stuck in a wetland or any other area during maneuvers, it is considered dead for the purpose of the training exercise. This procedure provides an incentive for maneuvering units to avoid wet areas and can offer some degree of protection to wetlands from the effects of vehicles.

### *4.7.3 Cumulative Effects*

The spatial boundary for biological resources is the installation boundary. Therefore only actions occurring within the installation boundary will be addressed relative to significant in this section.

Long-term direct minor cumulative benefits to RCW recovery efforts in the region would be expected from thinning 2,285 acres for DMPBAC construction and operation. Thinning in pine stands followed by prescribed burning every 2 to 3 years would be expected to create suitable habitat for RCW foraging and nesting. In addition to timber removal and thinning proposed in this EA, no other construction or training activities affecting RCW habitat are foreseeable Army actions at Peason Ridge. The installation has a comprehensive RCW management program that should continue to benefit the RCW at Peason Ridge. The Peason Ridge RCW population is considered isolated from other RCW populations, but efforts are under way to connect this population with others in the region. Thinning for the DMPBAC within the context of unchanging forest management practices elsewhere in the region would equal a long-term direct minor cumulative benefit to the RCW.

Short-term minor adverse cumulative effects on forest vegetation and associated ecosystems would be expected to result from converting 914 acres of pine forest to grassland at Peason Ridge. No other construction activities that would change forest types are proposed by the Army at Peason Ridge in the foreseeable future. Outside the spatial boundary for biological resources, in addition to clear-cutting and thinning proposed by the Army for the DMPBAC, the Forest Service has proposed to conduct timber thinning to enhance RCW habitat on 16,800 acres of the IUA to the south of the Fort Polk cantonment area. Although the Forest Service thinning would be implemented over a 10-year period, the sum of concurrent timber management operations in the region by both public and private entities could reduce the amount of forest cover in the region. Clearcutting and thinning for the DMPBAC, combined with the Forest Service thinning proposal and other industrial timber harvest clearcutting on private lands adjacent to Peason Ridge, would result in short-term minor adverse cumulative effects.

Short-term minor adverse cumulative effects on forest wildlife would be expected to result from converting 914 acres of pine forest to grassland at Peason Ridge. No other construction activities that would change forest types are proposed by the Army at Peason Ridge in the foreseeable future. Outside the spatial boundary for biological resources, in addition to clear-cutting and thinning proposed by the Army for the DMPBAC, the Forest Service has proposed to conduct timber thinning to enhance RCW habitat on 16,800 acres of the IUA to the south of the Fort Polk cantonment area. The sum of concurrent timber management operations in the region by both public and private entities could reduce the amount of forest cover available to some migratory birds and forest interior wildlife. Overall, thinning might negatively affect some species, but at the same time it would positively affect other species, such as grassland birds. This region of

Louisiana has ample thick forests but lacks thin forests and un-grazed grasslands, which would be created or enhanced by the proposed action. Minor adverse cumulative effects of clearcutting for the DMPBAC plus other industrial timber harvest clearcutting on private lands adjacent to Peason Ridge, balanced against the cumulative benefits to wildlife from the DMBPAC thinning plus the Forest Service thinning proposal, would result net short-term minor adverse cumulative effects on forest wildlife.

Short-term minor cumulative adverse effects on wetlands would be expected from filling approximately 1 acre of wetlands to build DMPBAC stream crossings, sediment basins, and targets. However, with appropriate wetland mitigation, there would be no net loss of wetlands, and adverse effects would not be significant. Fort Polk complies with section 404 of the Clean Water Act. The Corps of Engineers oversees the 404 permitting requirements under the Clean Water Act and determines mitigation necessary to offset impacts to wetlands. Any projects in the past, such as the construction of Roads on Peason Ridge during the early 1990s have had 404 permits issued. Although the Army has no additional foreseeable actions requiring a 404 permit at Peason Ridge, Fort Polk will comply with section 404 of the Clean Water Act if an action is proposed. Wetland losses from DMPBAC construction, in addition to other potential losses of wetlands acreage for other proposed construction projects on the Fort Polk main post and past permitted construction activities, if appropriately mitigated through Section 404 permitting, would result in only short-term minor cumulative adverse effects on wetlands.

No additional cumulative impacts result from past training activities at Peason Ridge when considered with the impacts from the proposed action. Routine application of environmental stewardship activities and preventive measures to avoid impacts from training, and inspection of training areas and use of corrective measures following past training activities to restore or reduce impacts from training have reduced those impacts such that effects of past training activities do not collectively, with the proposed action, contribute to produce cumulative environmental impacts.

### *4.7.4 Best Management Practices and Environmental Stewardship*

Under existing and proposed training levels, established soil conservation and ecological restoration programs at Peason Ridge would be expected to reverse some training-related losses in vegetation. The installation would be responsible for repairing training-related damage to soils and vegetation on DoD and Forest Service lands. After a training rotation is complete, inspectors conduct field inspections to identify trash and equipment that need to be removed from training areas, and also to identify areas with extensive soil disturbance. For example, inspectors note situations where holes need to be filled in or areas that need to be regraded to restore the land to its original contour. An environmental survey would take place at the same time as the Range Control inspection. Training effects that leave holes and damage roads, streams, wetlands, or other sensitive areas would be identified, and corrective actions would be prescribed. The ITAM LRAM program and its contractors would repair soils and vegetation damaged by old training activities. Recent damage to soil and vegetation would generally be repaired by the Directorate of Public Works. Natural resource managers would have a two-week Green Period every three months in which to carry out repair activities. Activities outside the Green Period could be scheduled with Range Control during weekly resource allocation conferences. The stewardship practices listed above would be given special attention to minimize any adverse effects on vegetation that might result from implementation of the proposed action.

*Forest Management.* Longleaf pine forests managed as RCW habitat at Fort Polk and Peason Ridge are treated with prescribed fire every 2 or 3 years. The two-week Green Periods for major management operations leave a very narrow window of opportunity for prescribed burning. Weather conditions further narrow opportunities for burning; prescribed burns cannot be conducted if weather conditions are too wet or too dry. Fortunately, techniques such as igniting fires from a helicopter allow forest managers to burn as many as 5,000 acres in a day. Prescribed burning data from the Environmental Sourcebook indicate that in the years 1996 through 2000, an average of 61 percent of the prescribed burning acreage goal was being burned at the JRTC and Fort Polk and Peason Ridge (JRTC and Fort Polk, 2001).

Prescribed burning is one of the most important forest management activities and is certainly the most time-sensitive in the KNF. Successful burns are dependent on not only climatic conditions but also the time of the growing season. Growing season burns have been observed to be more effective in eliminating invading hardwood trees, whereas dormant season burns can be more appropriate for maintaining herbaceous plant diversity in open pine stands. Military training and prescribed burning cannot be conducted at the same time because of safety concerns. Prescribed burning programs are susceptible to scheduling conflicts because prescribed burns must be precisely timed to achieve the desired biological effects. According to the Forest Plan, forest stands that are managed for RCW habitat should be burned every 2 to 5 years.

Fort Polk is currently conducting a Louisiana pine snake road crossing mortality study, and is also participating in a pocket gopher habitat distribution study in cooperation with the USFS Research Station at Nacgodoches, TX. In addition to research activities, a conservation agreement for the Louisiana Pine snake was drafted between the USFS, USFWS, Texas Parks and Wildlife, Louisiana Department of Wildlife and Fisheries, and Fort Polk. This agreement is intended to establish a framework for cooperation and participation in the protection, conservation, and management of the L.A. pine snake.

Except for prescribed burning and preservation through avoidance and sediment control, wetlands at Peason Ridge are generally not subject to active management. Both the Fort Polk Integrated Natural Resources Management Plan and Kisatchie Forest Management Plan have provisions for avoiding adverse effects on wetlands by marking some sensitive wetlands off-limits to military use and by implementing 50- to 150-foot buffer zones to protect wetlands during timber harvest.

## *4.8 CULTURAL RESOURCES*

### *4.8.1 No Action Alternative*

There would be no direct or indirect effects on cultural resources under the no action alternative because no construction or soil disturbance would occur and management of known sites and resources would continue in accordance with established programs and SOPs.

### *4.8.2 Proposed Action Alternative*

Short-term minor adverse effects could occur as a result of the proposed action alternative. Soil disturbance and excavations that are part of new construction could inadvertently disturb known archaeological sites or as-yet-unidentified archaeological or paleontological sites. Also, depending on the amount and location of foot or vehicle traffic during training maneuvers, these sites could be adversely affected by soil erosion or by displacement due to digging. All known archaeological sites considered for additional testing to determine NRHP eligibility are protected

in accordance with the Historic Preservation Plan (HPP) and are managed by the Cultural Resources Manager (CRM), Department of Public Works/Environmental and Natural Resources Management Division (DPW/ENRMD). Stewardship measures include marking all eligible sites with reflective posts that indicate, "do not drive/do not dig." All troops also have an environmental compliance officer who is trained to recognize these posts and understands that there are penalties for noncompliance (Basham-Wagner, personal communication, 2003). If an artifact is discovered, all activities are stopped. In addition, some buffer zone is added to identified site boundaries for the protected sites (Jim Grafton, personal communication, 2003).

All work is completed according to the HPP and in coordination with the Louisiana SHPO. Before new construction or training begins, the most recent map available from the CRM should be checked to avoid disturbance of protected archaeological sites.

Apart from archaeological sites, no Native American resources have been identified within the project areas. No paleontological resources are known to be present in the project area.

### *4.8.3 Cumulative Effects*

Previously unknown archaeological or paleontological sites could be adversely affected by soil erosion or by inadvertent displacement due to digging during construction or training activities under the proposed alternative. Other Army activities at the Peason Ridge training area include current and proposed training activities, the latter of which could involve more intensive training that may also disturb the soil. In sum, other Army actions (such as past training of home station units and JRTC rotations, past construction of dropzones, past construction of roads, and proposed future training of JRTC and home station units) at Peason Ridge plus those resulting from the proposed action would be expected to have no more than the short-term minor adverse effects already described. No activities outside of the area would be expected to contribute to effects on cultural resources at Peason Ridge.

### *4.8.4 Best Management Practices and Environmental Stewardship*

All known archaeological sites considered for additional testing to determine NRHP eligibility are protected in accordance with the HPP and are managed by the CRM. All NRHP-eligible sites are marked with reflective posts that indicate, "do not drive/do not dig." All troops also have an environmental compliance officer who is trained to recognize these posts and understands that there are penalties for noncompliance (Basham-Wagner, personal communication, 2003). All work is completed according to the HPP and in coordination with the Louisiana SHPO. This procedure would continue under the proposed alternative. In areas needed for training that could not wait for the additional testing, sites requiring additional testing to determine NRHP eligibility would be posted. If testing later were to show that a posted site is ineligible, the posts would be pulled. In addition, some buffer zone is added to identified site boundaries for these protected sites (Jim Grafton, personal communication, 2003).

## *4.9 NOISE*

### *4.9.1 No Action Alternative*

Under the no action alternative, the DMPBAC would not be constructed and operated as described in Section 2. Implementing the no action alternative would result in no appreciable change to the ambient noise levels at Fort Polk. Noise would continue to be generated by home

station and rotational units. Existing noise sources include military vehicles, equipment, aircraft, and weapon firing.

Model predicted annual average noise level contours for current activities at Peason Ridge are shown in Figure 3-5. The Busy Day Zone II contour extends beyond the northern installation boundary between 500 and 2,300 meters. This area is predominately forested although there are scattered residences. This zone is compatible with noise-sensitive land use. The Zone II contour extends less than 500 meters from a small section in the middle of the northern Peason Ridge boundary. This area is also forested with scattered residences. The Zone III contour is contained entirely within the installation boundary.

Currently the Public Affairs Office Hotline receives an average of 5 to 6 noise annoyance complaints per month.

### *4.9.2 Proposed Action Alternative*

Under the proposed action alternative, periodic short-term moderate adverse effects due to increases in noise levels would be expected.

***Medium to Heavy Artillery Firing***. During operation of the DMPBAC, there would be an estimated 242 annual training days at Peason Ridge of which 82 days would be available for medium to heavy artillery and Stryker Mobile Gun System (MGS) firing in the DMPBAC area. These 82 days represent approximately 7 days each month of the year. While this firing would be occurring, other Peason Ridge Training activities would be curtailed.

The BNoise2 model was used by USCHPPM to predict the annual average noise levels attributable to the proposed Stryker MGS and medium to heavy artillery training proposed to occur in the DMPBAC area. According to Fort Polk, 2,800 rounds of artillery and MGS munitions would be fired in the DMPBAC area annually. The distribution of these rounds are listed in Table 4.9-1. Artillery and MGS munitions could be either inert or high explosive (HE) projectiles. Inert rounds do not explode near their target where HE projectiles do. These rounds need to be distinguished in the BNoise2 model because of the different contribution to the noise level.

**Table 4.9–1**
**Expected DMPBAC Operations for Bnoise2 Inputs**

| Weapon | Number of Rounds | |
|---|---|---|
| | Daytime | Nighttime |
| 105mm Stryker Inert | 1,173 | 587 |
| 120mm Tank Inert | 293 | 147 |
| 120mm Mortar HE | 200 | 100 |
| 155mm Howitzer HE | 200 | 100 |

* Inert rounds do not make noise upon impact

To run the model, firing positions were assumed to be utilized so that 25 percent of the MGS and artillery rounds would be fired from the northern one-third of the DMPBAC and the remaining 75 percent in the southern two-thirds of the DMPBAC. The results of the USCHPPM BNoise2 model run for operation if the proposed DMPBAC are shown in Figure F-1 of Appendix F. The model predicts the Busy Day Zone II (62-57 CDNL) contour would extend beyond the northern installation boundary between 500-2500 meters. As discussed in Section 3.9, this zone is compatible with noise-sensitive land use. The Busy Day Zone II represents the probability of less than 15 percent of the population being highly annoyed by the noise level within this zone. Land within this zone is predominantly forested although a few residences are present. The Zone II contour would extend beyond the northern installation boundary less than 500 meters, and less than 500 meters beyond the eastern installation boundary near the south-east corner of the DMPBAC. This zone is normally incompatible with noise-sensitive land use. Long-term direct minor to moderate adverse effects would be expected. Land within this zone is primarily forest with some scattered residences and one cemetery. The Zone III contour is contained entirely within the installation boundaries.

The U.S. Army Corps of Engineers, Structural Mechanics Division, conducted an analysis of the seismic environment resulting from the firing of 105mm tank guns (similar in effect to the 105mm gun on the Stryker MGS vehicles) at Fort Polk in 1985. Measurements taken at 800 meters and 3,900 meters from the source never exceeded 0.015 inch per second. The U.S. Bureau of Mines recommends a vibration threshold of 0.5 inch per second to prevent damage. No measurements approached the Bureau's threshold value, and additional measurements are expected to remain below the vibration threshold. A hydrogeology study conducted in 1985 assessed the impact on wells from ground motion caused by the firing of 105mm tank guns. Due to the low soil velocities measured by the U.S. Army Corps of Engineers and the depth of wells around Peason Ridge, any impact should be imperceptible. According to the 1985 study, properly constructed wells should not experience seismic damage from the firing of large-caliber weapons.

***Helicopter Activities.*** Periodic short-term minor adverse effects on the noise level would be expected near the Helicopter Flight Zone and the associated flight paths. There would be no increase to existing noise levels as there is no planned increase in number of flights under the proposed action.

### *4.9.3 Cumulative Effects*

Under the proposed action alternative, periodic short-term moderate adverse cumulative effects due to increases in noise levels would be expected.

Since its inception, Peason Ridge has trained soldiers on various weapon systems that produce noise. Fort Polk was home to the 5th Infantry Division from the 1970s through 1992 and used Peason Ridge extensively for live fire exercises. More recently home station and rotation units have used the training area for live fire exercises. Additionally, the Air Force has used Peason Ridge Impact Area for bombing in the past. Although past noise events cannot be cumulatively added to any future noise to create a louder noise, Section 3.9 describes how increased annoyance can result from continual exposure to periodic blast or "C"noise. This way annoyance from future noise events could result in more frequent complaints. Other activities could add to expected future noise levels from construction and operation of the DMBAC, and other non-

government local construction and maintenance activities in the area. Cumulative effects would not be considered significant because noise guidance published in DA PAM 200-1 would not be exceeded.

Once the 2,800 rounds of artillery are deducted from the Peason Ridge totals, the existing noise contours (Figure 3-5) would be drawn inward toward the center of Peason Ridge. This would result in the northwestern portion of the Peason Ridge Zone I and II noise contours to be shifted to the east. Thus the DMPBAC Noise contours would closely represent the cumulative noise effects of the activities in each area. The cumulative noise effect would result in periodic short term moderate adverse effects.

BNoise2 Model data for training activities on Fort Polk's main post, including medium to large caliber weapons firing into the Red Leg Impact Area, indicate all noise contours are contained within the installations boundaries. A distance of 15 miles separates Fort Polk main post and the Peason Ridge area. Noise generated from main post would not contribute cumulatively to the noise generated in the Peason Ridge and DMPBAC areas. Although the noise level would remain compatible with most existing land uses, periods of noise levels greater than 60 dB CDNL would be expected to occur along the northern edge of Peason Ridge.

### *4.9.4 Best Management Practices and Environmental Stewardship*

The best management practices outlined in the Fort Polk Noise Management Plan were followed in selection of the proposed firing points. Noise levels would be minimized by relocation of firing points further away from the installation boundary, maintenance of a forested buffer between firing points and the installation boundary, and restriction of firing activities during periods when weather conditions most likely increase sound transmission. Fort Polk plans to install noise monitoring stations in areas nearest residential domiciles. Analysis of this data would aid Fort Polk in determining the need to consider additional measures to reduce noise levels extending beyond the installation boundaries.

As a good steward, sensitive to noise complaints and annoyances, Fort Polk's Public Affairs Office (PAO) maintains a Noise Hotline (337-531-1431) to receive noise complaints or other concerns about military training. The PAO monitors the hotline daily and has a policy of responding to complaints within 24 hours. In recent years, complaint calls have averaged 5 or 6 per month. Rotational training periods at Fort Polk receive coverage by the local news media to inform surrounding communities of periods of potential increase in noise levels due to these training activities.

## *4.10 AIR QUALITY*

### *4.10.1 No Action Alternative*

Under the no action alternative, there would be no effect on air quality relative to baseline conditions. The DMPBAC would not be developed. Therefore, no new facilities associated with the proposed DMPBAC would be constructed and thus no increase in training would occur beyond the level currently planned at the JRTC and Fort Polk.

### *4.10.2 Proposed Action*

Under the proposed action, long-term minor adverse effects on air would occur as a result of military training and operations over the next 20 years. Under the proposed action an additional 700 acres of land in the Peason Ridge area would be developed to house the DMPBAC facilities and operations. This area would be used 242 days a year for military training; only 82 days would be used for heavy artillery firing exercises. The development of the DMPBAC would result in short-term minor increases in emissions. Emissions would be the result of operations such as cleaning operations, degreaser use, aircraft flight, engine run-ups, general solvent use, vehicle operation, operation of internal combustion engines (diesel), use of ground support equipment, use of munitions and obscurants, BIDS training, maintenance of equipment, and fugitive emissions resulting from military field training exercises.

***Air Emissions Calculations.*** Fort Polk is primarily in Vernon Parish, with small portions of the post (Peason Ridge and the proposed DMPBAC area) extending into Sabine and Natchitoches Parishes. All three parishes are in attainment with respect to the NAAQS. (See Section 3.10).

Estimates of emissions are never considered as accurate as data collected from good sampling techniques or from source-testing of the equipment. However, emission estimates normally produce more conservative results. Emission factors for the proposed action were obtained from the following:

- Compilation of Air Emission Factors, EPA Report AP-42 (1998).
- Compilation of Air Emission Factors for Heavy Duty Diesel Vehicles and Off-Road Vehicles, AP-42, vol. II, fifth ed., Appendix H.
- Emission Inventories for Turboshaft Engines, Aircraft Environmental Support Office (AESO), San Diego, CA (1990).
- Summary Tables of Gaseous and Particulate Emissions from Aircraft Engine, AESO, San Diego, CA (1999).
- Nonfacility Particulate Matter Issues in the Army, Construction Engineering Research Laboratory Report ERDC/CERL TR-01-50 (2001).

For regulatory purposes, EPA and states prefer that actual source-testing of emissions be conducted. Recognizing the time and cost associated with such source testing, EPA recommends the following:

- Use of EPA Report AP-42 for listed emission factors;
- Emissions based on source testing of similar equipment; or
- Extrapolation of factors provided for similar types of source categories.

For this EA, the best available data and a conservative approach were used in conjunction with the above-published sources for comparable Fort Polk equipment. For some emission sources such as the Stryker, tracked vehicles, and other typical off-road vehicles, emission factors were extrapolated from known emission factors for equipment of similar horsepower ratings, sizes, and activity categories. In keeping with the EPA recommendation, these calculations are conservative and in concert with the USACE and Fort Polk's practice of being outstanding environmental stewards.

Data inputs for calculations of emissions resulting from the population of Fort Polk off-post workers who commute, as well as typical post daily operations using GSA vehicles, were received from Fort Polk's Public Affairs Office. Construction data were obtained from Fort Polk's Department of Public Works and the above-referenced publications for emission factors. Existing stationary source data were obtained from Fort Polk's Title V Operating Permit. Calculations for estimated criteria pollutants that would result from the proposed action are on file in the Fort Polk Environmental Office and are provided in Appendix G.

Military training activities produce exhaust emissions and fugitive dust from operation of vehicles and equipment and from aircraft flying operations during training exercises. Other Fort Polk nonfacility sources generate particulate matter (PM), an air pollutant, during military operations. Soil-based PM is generated from training activities, prescribed burning, smokes and obscurants training, artillery practice, weapon impact testing, BIDS training, and open burning/open detonation (OB/OD).

These emissions are partially mitigated by the high extant air quality, the large air mass over the affected localized training areas, and the short duration of activities that produce these emissions. Training exercise emissions are dispersed over a 300-square-mile area and thus are highly diluted before they reach the post perimeter.

***Emissions Resulting from Proposed New Construction Activities.*** The proposed action would require new construction projects on Peason Ridge, resulting in emissions from construction equipment and mobile sources. Table 4.10–1 shows the DMPBAC facilities, targets, qualification and maintenance roads, and infrastructure that would be constructed (see Section 2.0), and Table 4.10–2 depicts the estimated criteria pollutant emissions that the proposed construction activities would generate.

**Table 4.10–1**
**Proposed DMPBAC Construction**

| Item | Quantity | Feet/miles/acres |
|---|---|---|
| Urban Assault Course | 1 | 7,000 $ft^2$ |
| Shoot House (Live-Fire Village) | 1 | 2,700 $ft^2$ |
| Breach House (Live-Fire Village) | 1 | 3,000 $ft^2$ |
| Central Control/ARR Building | 1 | 6,000 $ft^2$ |
| Range Storage/Maintenance | 1 | 3,800 $ft^2$ |
| Miscellaneous buildings | N/A | 1,800 $ft^2$ |
| Land clear-cut | N/A | 914 acres |
| Land thinned | N/A | 2,285 acres |
| Improve existing roads | N/A | 12.03 miles |
| Miles new roads | NA | 10.62 miles |
| Infrastructure | N/A | 50,000 feet |

**Table 4.10–2**
**Emissions Resulting from New Construction Activities per Year (Tons/Yr)**

| | Miles/yr | Hours/yr | $NO_x$ | VOC | PM | CO | $SO_x$ |
|---|---|---|---|---|---|---|---|
| Construction | a | a | 10.68 | 5.82 | 1.04 | 39.94 | 0.93 |
| Clear-cut/thinning | N/A | 242 | 12.08 | 6.55 | 0.68 | 8.36 | 0.82 |
| Road construction | 20 miles | N/A | 2.25 | 0.30 | 0.30 | 3.73 | 0.15 |
| **Total** | | | **25.01** | **12.67** | **2.02** | **52.03** | **1.90** |

a See appendix for hour or miles for construction equipment
Source: Tetra Tech, Inc. 2002
Note: $NO_x$ = nitrogen oxides; VOC = volatile organic compounds; PM = particulate matter; CO = carbon monoxide; $SO_x$ = sulfur oxides.

**Table 4.10–3**
**Increase in Emissions from New Stationary Sources per Year (Tons/Yr)**

| | $NO_x$ | VOC | PM | CO | $SO_x$ |
|---|---|---|---|---|---|
| Title V baseline | 252.58 | 121.99 | 15.02 | 95.64 | 11.07 |
| **New sources proposed** | **1.53** | **0.05** | **0.03** | **1.04** | **0.04** |
| New total | 254.11 | 122.04 | 15.05 | 96.68 | 11.11 |

Source: Fort Polk Title V Operating Permit No. 0969-00010-V2, 2001.

***Emissions from Stationary Sources.*** Under the proposed action, additional facilities would require HVAC systems (stationary sources). It is estimated that some of the facilities would involve new boiler units (4 or 5) totaling approximately 3.46 MMBtu/hr. Prior to installation of each HVAC system, Fort Polk would determine the most efficient and environmentally friendly boiler system to employ. Each installed boiler would be evaluated for the need to register with the LDEQ and to request a modification or addition to Fort Polk's Title V Operating Permit. Table 4.10–3 shows the increase in criteria pollutants resulting from new facility HVAC systems, which would be less than 2 percent for CO and less than 1 percent for the other pollutants over the existing Fort Polk permitted stationary source emissions.

***Emissions Resulting from Mobile and Aircraft Units in Training Activities.*** The proposed DMPAC would be designed with five heavy artillery roads with designated firing positions–Qual Road North, Qual Road South, Querry Road, 505 North, and 505 South. Along the roads would be several battle positions and machine gun bunkers. The qualification roads would extend 3,000 meters firing at a number of targets, both moving and stationary. Armored training vehicles would include the Abrams, the Bradley, and the new Stryker ICV. The Stryker uses JP-8 fuel,

which burns cleaner than diesel and produces less pollutants, but emission factors are not yet available. The Stryker emissions in this document were extrapolated from the emissions of similar off-road vehicles (heavy trucks and tracked vehicles) using diesel fuel. In all likelihood, the Stryker emissions would be lower than the conservative estimate. The aircraft used under the proposed action would include the Apache helicopter and Shadow unmanned aerial vehicle (UAV). The number of miles driven and hours operated for the mobile equipment and aircraft are conservative average estimates based on training scenarios conducted during previous years. Heavy artillery firing is estimated to occur only 82 days of the 242 days of total training on the DMPBAC. Table 4.10–4 compares the criteria pollutant emissions resulting from mobile and flight activities under the proposed action.

**Table 4.10–4**
**Mobile and Aircraft Contribution to Criteria Pollutant Emissions Resulting from Proposed Action (Tons/Yr)**

| | NOx | VOC | PM | CO | SOx |
|---|---|---|---|---|---|
| **Proposed** | | | | | |
| Mobile | 3.85 | 2.73 | 0.67 | 24.83 | 0.46 |
| Aircraft | 1.87 | 0.21 | 1.50 | 3.00 | 0.60 |
| **Total/yr** | **5.72** | **2.94** | **2.17** | **27.83** | **1.06** |

Source: Tetra Tech, Inc., 2002.

***Emissions from Ammunition, Obscurants, BIDS Training, and Prescribed Burns.*** Emissions from pyrotechnic and ammunition detonations and firing of artillery rounds include smoke of different colors. During the FY 2001 training exercises at Fort Polk, a total of 6 million rounds of ammunition were fired and 18,000 smoke-related devices were dispensed. Criteria pollutant emissions from ammunition firings are extremely small, very localized, and quickly dissipated. Accurate estimates of criteria pollutants from heavy artillery firing are available for only PM. The concern with smoke devices is the PM release. Firing of heavy artillery in the DMPBAC would involve inert 105mm and 120mm fired from the armored vehicles. The total number of rounds would be 2,200 annually. Additionally, 120mm and 155mm mortars totaling 600 rounds would be fired in the DMPBAC. Estimates for emissions resulting from artillery rounds and rounds of ammunition fired are considered insignificant because the amount of primer and propellant is extremely small and produces only microgram quantities of pollutants. PM emissions from smokes and obscurants are shown in Table 4.10–5. The emissions are based on estimates of expended items, the mass of obscurant consumed, and the assumption that 99 percent of the mass of smokescreens contribute to particulate matter. Previous investigations (CERL, 2001) indicate that the PM-10 composition of all PM is 97 percent and most of this percentage is PM-2.5.

**Table 4.10–5**
**Estimated PM Generated from Ammunitions & Obscurant Activities**

| Activity | Number Expended | Pounds of Propellant/Obscurant | PM Generated Tons/yr |
|---|---|---|---|
| Rifle Firings | 1,971,378 | 30,396 | 0.008 |
| Obscurants | 1,399 | 3,497 | 1.660 |
| Artillery | 2,800 | 4,200 | 0.001 |
| **Totals** | **1,975,577** | **38,093** | **1.669** |

Note: An M16 blank cartridge has 7 grams of propellant and produces 4,000 µg PM/g propellant. Assumption: Obscurants weigh 2 pounds and produce 950 lb PM per 1,000 pounds obscurant. Average propellant used to fire an inert projectile is 1.5 pounds.
Source: CERL, 2001.

As discussed in Section 3.10, EPA is continuing to encourage the state to prepare for the new PM-2.5 promulgation to be completed and enacted in 2005. Until then, established PM-10 guidance and available emission factors must be used in preparing an EA or EIS.

Potential elevation of PM might result from any increases in prescribed burns during the late fall and early winter months. However, actual data for the Lake Charles and Alexandria air monitoring stations indicate the annual mean values for PM were 25 micrograms per cubic meter ($\mu g/m^3$). Predicted total emissions resulting from operations at Fort Polk indicate an annual arithmetic mean of PM-10 of 9.01 $\mu g/m^3$, which is well below the standard of 50 $\mu g/m^3$. Assuming the worst-case scenario of 9.01 $\mu g/m^3$ per training day, the proposed action would not result in a significant cumulative effect on the annual daily average or the 24-hour limit of 150 $\mu g/m^3$.

The visual effect of smoke and obscurants would exceed 20 percent at the discharge point; however, this would be dissipated as the obscurant cloud dispersed and mixed with air, reducing the opacity to much less than 20 percent before it reached the fenceline.

BIDS training produces *Bacillus subtilis* (BG), a benign organism that does not have traits that cause disease. In 1997 EPA issued a final risk assessment on the use of *Bacillus subtilus* at Fort Polk. The assessment results revealed that BG can be characterized as follows:

- Has a very low degree of virulence
- Has a low ecological risk
- Should not pose an unreasonable risk to human health
- Is almost completely innocuous
- Is recommended for a tiered exemption for use at Fort Polk

A biological study by the USACE (1999) in conjunction with the U.S. Fish and Wildlife Service revealed that use of BG at Fort Polk would have no effect on the red-cockaded woodpecker. Additionally, the USFWS reported that no short- or long-term environmental effects had been

observed during training studies at Dugway Proving Grounds, Utah, or at Fort McClellan, Alabama.

In August 2000 the JRTC released an EA and a FNSI on the effects of aerial release of BG. The EA and FNSI determined that BG used at the designated sites on Fort Polk training ranges would have no effect on human health, the red-cockaded woodpecker, or the environment if used as outlined in the SOP for Field Dissemination of BG for BIDS Training. There would be no change in the BIDS training exercises if a DMPBAC were developed.

The proposed action would continue the use of fog oil for field smoke screens. The term "fog oil" is somewhat misleading because the original fog oil used contained large quantities of aromatic organic compounds and polycyclic aromatic hydrocarbon (PAH) compounds. Today the Army uses a de-aromatized diesel fuel distillate (MIL-F-1270E) that is less than 0.10 percent PAHs and cyclic aromatics. The smoke is produced by the injection of diesel fuel into the hot manifold of the M58 smoke generator and expelled out the exhaust as a condensation aerosol of a suspension of 0.5- to 1.0-micrometer fuel droplets in air. It was also estimated that only 1 percent of the diesel fuel would be expelled as vapor. The maximum rate of fog oil production was calculated to be 80 gallons per hour. This rate would result in the release of 2.58 pounds per hour of VOCs and 350 pounds of PM per hour. Assuming the use of fog oil during 10 rotations to be 30 hours annually, the resultant emissions would be 77.4 pounds of VOCs and 10,515 pounds of PM. The rotations each year would remain at 10; 2 or 3 of the rotations would involve 3 battalions rather than 2, and 1 rotation would be a SBCT. Therefore, there would be no increase in the volume of fog oil used during training under the proposed action.

Potential effects on ambient air quality were modeled by the Meteorological and Obscurants Division, Dugway Proving Ground, using the SCREEN dispersion model. The SCREEN model was developed, and approved by EPA, for screening air emission concentrations. The model predicted a 24-hour average ambient air concentration for PM-10 of about 7 $\mu g/m^3$ at the location of concern (LOC). The LOC was the nearest off-post site from the point of release. This predicted value is roughly 20 times less than the primary NAAQS for PM-10. Even under worst-case conditions, the predicted concentration of PM at the installation boundary would be 20 times less than the daily average concentration allowed by the NAAQS for PM-10, and there would be no adverse effects on ambient air quality at the LOC (ENRMD, 2000).

In 1989 the JRTC and Fort Polk received exemption, under 33 LAC III:1111, for air emissions resulting from fugitive dust from vehicles, smoke from obscurants, burning and decomposition of fog oil, burning of tires (which has been eliminated from Fort Polk's practices), and in-place detonation of small explosives associated with training exercises conducted within the boundaries of the military reservation and Peason Ridge training area (LDEQ, 1989). Although air quality standards might be exceeded locally at source points within the installation boundary during training events, the events would not cause exceedances or visual obstructions outside the JRTC and Fort Polk Military Reservation.

***Other Hazardous Air Pollutants.*** In addition to the criteria pollutants discussed above, EPA has identified other HAPs such as the polyaromatic hydrocarbon (PAH) family of dioxin, BTEX, MTBE, and other polybenzene-type compounds (7-PAH and 16-PAH). Estimates for the emissions for these compounds have been reported by EPA (1997). The amount of PAHs resulting from JP-8 is significantly lower than that from JP-4 or other diesel-containing fuel, and 0.006 percent of the VOCs produced from Heavy-Duty Diesel Trucks (HDDT) is in the form of

PAH. Thus, the increased estimated amount of PAH produced by military armored vehicles and aircraft under the proposed action is 0.00006 times 15.92 tons, or 1.9 pounds. This quantity is less than a 1 percent increase over the PAH currently produced in the ROI. This increase is significantly small when compared to the national yearly estimate from all road vehicles of 1.5 million tons. This vehicular tonnage is equaled by the annual forest fires in the United States and surpassed by municipal waste combustion and coal combustion.

### *4.10.3 Cumulative Effects*

Long-term minor adverse cumulative effects on air quality would be expected. Table 4.10–6 depicts the overall qualitative effects on air quality that would result from the proposed action. Regionally, increases from stationary point and mobile source emissions are expected in the ROI. Because only minor changes in population and economic development are projected over the next 20 years, however, only minor increases in emission rates are expected. Table 4.10–6 also indicates that the proposed action would result in less than a 0.04 percent increase of any stationary source criteria pollutant emissions with respect to the emissions of the ROI parishes. Nonanthropogenic sources in the ROI contribute to air pollutant emissions in the region as well. These include natural events such as forest fires set by lightning, emissions of VOCs from pine forests, and episodic releases of pollen from pine and hardwood trees. When combined with emissions from other regional sources, effects would remain minor.

**Table 4.10–6**
**Stationary Source Increases to Criteria Pollutants in the ROI from Proposed Action (Tons/Year)**

| Location | $NO_x$ | VOC | PM | CO | $SO_x$ |
|---|---|---|---|---|---|
| Vernon Parish | 464 | 198 | 2.3 | 383 | 59 |
| Sabine Parish | 214 | 1,084 | 363 | 1,317 | 12 |
| Natchitoches Parish | 2,685 | 967 | 455 | 4,080 | 296 |
| Fort Polk | 33 | 47 | 2.0 | 10 | 1 |
| Total ROI | 3,396 | 2,296 | 822.3 | 5,790 | 368 |
| Proposed action | 1.53 | 0.05 | 0.03 | 1.04 | 0.04 |
| Percent increase to ROI from proposed action | 0.04 | 0.01 | 0.01 | 0.02 | 0.01 |

Although the proposed action would result in an increase in criteria pollutant emissions, the action would not violate any NAAQS or other environmental standards, including Prevention of Significant Deterioration (PSD). The total emissions from all activities under the proposed action would result in unavoidable and irreversible emission of 32.26 tons of $NO_x$, 15.65 tons of VOC, 5.87 tons of PM, 80.90 tons of CO, and 3.00 tons of $SO_x$. Proposed stationary source emissions represent less than a 1 percent increase over Fort Polk's present stationary source emissions for $NO_x$. The effects on air quality as a result of additional fuel-dispensing facilities would require permitting under the Title V Operation Permit program. Additionally, any boiler that exceeds 1 MMBtu would be permitted under the Title V Operation Permit. Past training and construction activities at Peason Ridge have met CAA and Title V operation permit emission requirements for criteria pollutants. Foreseeable Fort Polk projects in addition to the proposed development of the

DMPBAC include transformation from the 2nd ACR to the 2nd CR, construction of approved MCP projects, and replacement of Black Hawk and Kiowa helicopters by the Comanche helicopter. It is anticipated that the Comanche's contribution to criteria pollutant will be less than those of the Black Hawk and the Apache, resulting in a beneficial effect on air quality. There would be no change in the BIDS training exercises or the amount of fog oil used if the proposed DMPBAC is developed. Most of the criteria pollutant emissions resulting from the proposed action would be from exempt mobile sources. The increase in mobile source emissions due to mobile and training exercises cannot be calculated because of the absence of a typical annual baseline. However, these mobile emissions would be in line with predicted general mobile transportation growth of 5 percent. Activities resulting from the proposed action combined with past, present, and future foreseeable activities would not create a visual impairment on any public roads or generate sufficient pollutants to cause a major effect on the air quality of communities surrounding Fort Polk.

### *4.10.4 Best Management Practices and Environmental Stewardship*

The installation would continue to practice and foster sound environmental stewardship of the environment through its existing BMPs, SOPs, and cooperative agreements. Military personnel would continue to follow training SOPs regarding BIDS, hazardous material and waste management plans, containment berms for tank spill prevention, controlled use of volatile organic solvents, and Spill Prevention and Contingency Countermeasures Plans. The installation would continue to monitor compliance with its Title V Operation Permit and encourage pollution prevention through use of environmentally friendly materials. The installation would continue to encourage the use of more environmentally friendly or "green" munitions and obscurants,

## *4.11 SOCIOECONOMICS*

### *4.11.1 No Action Alternative*

#### *4.11.1.1 Regional Economy*

No new or additional effects would be expected. Implementation of the no action alternative would not result in a change in the local economy or population.

#### *4.11.1.2 Housing*

No new or additional effects would be expected. The ROI housing market has a surplus of housing units. This surplus would be expected to continue because there would be no change in the number of people requiring housing in the ROI as a result of the no action alternative.

#### *4.11.1.3 Public Recreation*

No new or additional effects would be expected. Implementation of the no action alternative would not change recreational use of Peason Ridge or the surrounding areas.

#### *4.11.1.4 Environmental Justice*

No new or additional effects would be expected. There are minority and low-income residents within the ROI, but no disproportionately high or adverse human health or environmental effects on those populations would occur as a result from implementing the no action alternative.

#### *4.11.1.5 Protection of Children*

No new or additional effects on children would be expected. The no action alternative would not cause a change in public health or safety risks that could affect children. The Army would continue to maintain the fence around the perimeter of Peason Ridge and would continue to adhere to safety regulations and procedures.

#### *4.11.1.6 Public Health and Safety*

Under the no action alternative, no changes would occur relative to baseline conditions or the effects of current operations on public safety. The proposed DMPBAC site would remain forested and would not be used for high-intensity military training purposes, resulting in no additional increases in risk to public health and safety. Risks to public health and safety from the operation of military vehicles are minimized through strict adherence to applicable safety regulations and procedures. Military traffic safety under the no action alternative is detailed in Section 4.12, Transportation and Infrastructure. Under the no action alternative, environmental health and safety risks to and effects on military personnel or on-site contract workers from exposures to UXO, lead, or military munitions associated with existing training ranges would not increase or decrease.

Some risk to military personnel is associated with current training activities, operations, and land uses, including vehicular accidents, aircraft accidents, or injuries resulting from the improper use of unrecovered military equipment. However, the probability of such occurrences is and would continue to be low for military personnel and very low for the public.

Army regulations (ARs), field manuals (FMs), and technical manuals (TMs) govern the conduct of training exercises and the operation of military vehicles, equipment, and aircraft. The JRTC and Fort Polk Regulation 385-1 also addresses safety requirements for maneuver training exercises conducted on- and off-post. Officers in charge and safety officers who accompany units in the field must be familiar with JRTC and Fort Polk Regulation 385-1 and appropriate ARs, FMs, and TMs; the officers are also required to attend annual safety briefings. These regulations and guidelines would continue to govern exercises and conduct occurring within all areas permitted for military use.

Current training exercises and operations do not involve children. Current hazards or risks associated with the use, continued presence, or accumulation of lead, munitions, or UXO in high-intensity training areas, live-fire areas and complexes, and artillery impact areas on Peason Ridge would not increase under the no action alternative. However, levels of lead, UXO, and military munitions associated with military training in on-site and off-site media, including groundwater, surface water, soil, and dust, are not currently known.

Health and safety risks associated with aircraft would not increase under the no action alternative. Potential risks of accidental aircraft crashes or other types of accidents in the Fort Polk region are described in Section 4.12.2, Airspace and Air Traffic.

### *4.11.2 Proposed Action Alternative*

#### *4.11.2.1 Regional Economy*

***Methodology***. The economic effects of implementing the proposed action were estimated using the Economic Impact Forecast System (EIFS) model. The EIFS model is a computer-based economic tool that calculates multipliers to estimate the direct and indirect effects resulting from a given action. Changes in spending and employment represent the direct effects of the action. Based on the input data and calculated multipliers, the model estimates changes in sales volume, income, employment, and population in the ROI, accounting for the direct and indirect effects of the action. Appendix H describes the EIFS model in more detail and presents the model input and output tables.

When using the EIFS model, a change is considered significant if it falls outside the normal range of ROI economic variations. To determine historical variability, the EIFS model calculates a rational threshold value (RTV) profile for the ROI. This analytical process uses historical data for the ROI and calculates fluctuations in sales volume, income, employment, and population patterns. The historical extremes for the ROI become the thresholds of significance (the RTVs) for social and economic change. If the estimated effect of an action falls above the positive RTV or below the negative RTV, the effect is considered significant. In an EA, significance of socioeconomic effects alone does not trigger the requirement for preparation of an EIS.

The model requires the following input data: the names of the parishes making up the ROI, the change in local procurement (sales volume) due to the action, and the number of civilian or military personnel affected by the scenario and their average income.

***EIFS Results***. Short-term direct and indirect moderate beneficial effects would be expected. Because the construction of the DMPBAC is scheduled for 2003, it was assumed that the budget for the proposed action would be spent within that year. The employment and procurement of materials associated with the construction of the DMPBAC and associated facilities would have a positive effect on the economy of the ROI, increasing ROI sales volume, income, and employment, as determined by the EIFS model (Table 4-11.1). Most of the economic benefits would be temporary, lasting for only the duration of the construction period. The changes in sales volume, income, employment, and population would fall within historical fluctuations and would have minor beneficial effects on the economy of the ROI.

#### *4.11.2.2 Manufacturing and Commercial Activities*

Long-term minor beneficial effects on the local economy from timbering could occur. As part of the proposed action, the Army would clear-cut 914 acres and thin 2,285 acres in Peason Ridge The sale of the timber would be beneficial to the financial health of the parishes because the parishes would receive a portion of the tax receipts from the sale.

No new or additional effects on other commercial activities would be expected.

#### *4.11.2.3 Housing and Property Values*

Localized long-term moderate adverse effects on the value of private property (homes) near the perimeter of Peason Ridge and the proposed DMPBAC could occur. The proximity of the homes

**Table 4.11–1**
**EIFS Construction Model Output for the Proposed Action at Fort Polk**

| Indicator Variable | Projected Change | Percentage Change | RTV Range (in %) |
|---|---|---|---|
| Direct sales volume | $13,829,070 | | |
| Induced sales volume | $11,201,550 | | |
| Total sales volume | $25,030,620 | 3.43 | -6.26% to 6.24 |
| | | | |
| Direct income | $1,577,733 | | |
| Induced income | $1,277,964 | | |
| Total income | $2,855,697 | 0.17 | -4.76% to 6.09 |
| | | | |
| Direct employment | 98 | | |
| Induced income | 80 | | |
| Total employment | 178 | 0.36 | -9.47% to 8.77 |
| | | | |
| Local population | 0 | 0.00 | -5.36% to 6.95 |

to the proposed training range could periodically subject some residents to noise annoyance during the day and night, lights from aircraft during the night, and increased traffic on area roads associated with range operations.

Private lands that may be incidentally damaged as a result of military training would be repaired in accordance with the Army's maneuver damage inspection and repair procedures. The Army would maintain its complaint hotline, through which landowners would be able to notify the Army immediately of any infringements and receive an expeditious response. These actions would help to mitigate the potential direct effects on private property from the proposed action.

Although the measures described above would mitigate the potential direct effects on private property, the effects could still affect property value. The noise and traffic generated by the proposed training activities could affect the property value of homes by reducing their resale value or their ability to be sold.

#### *4.11.2.4 Public Recreation*

Long-term minor direct adverse effects on public access and recreational value would be expected. Under the proposed action, the number of military training days on Peason Ridge would increase. Because recreational use in the form of hunting on Peason Ridge is subject to military training schedules, the number of recreational visitor days would be expected to decrease. Because use of Peason Ridge for recreational activities is already very limited, however, a further reduction in recreational visitor days would not be expected to result in an appreciable change in the pattern of recreational use.

#### *4.11.2.5 Environmental Justice*

No new or additional effects would be expected. There are minority and low-income residents within the ROI, but no disproportionate high or adverse human health or environmental effects on those populations would result from implementing the proposed action.

#### *4.11.2.6 Protection of Children*

No new or additional effects would be expected. The proposed activities would not involve children or present public health or safety risks that could affect children. Construction activities would take place in areas that are off-limits to the public. Peason Ridge would remain enclosed by a fence, and the Army would continue to adhere to all applicable safety regulations and procedures.

#### *4.11.2.7 Public Health and Safety*

Effects on public health and safety from the implementation of the proposed action would be expected to range from minor adverse effects (including those associated with increased operations training) to minor beneficial effects (including increased safety training).

The potential health and safety risks associated with the proposed action are described in this section in terms of (1) public safety hazards from military operations, (2) public health hazards from exposure to hazardous waste or hazardous materials, and (3) disproportionate environmental health or safety risks to children.

The proposed action would primarily involve changes in types of activities that occur within the DMPBAC and the equipment and vehicles used. Live-fire gunnery exercises would occur at the DMPBAC, and units would use helicopters, Stryker IAVs, M1 tanks, and numerous other types of vehicles, weaponry, and equipment during training exercises.

Some minor direct adverse effects on human health and safety would be expected to accompany the proposed action because the introduction of new weapon systems, equipment, and vehicles would be accompanied by risks associated with the DMPBAC that were not present previously. However, the risks of these minor adverse effects would be minimized through training in equipment use and range safety. The training of soldiers in the use of new equipment, weapons, and vehicles would occur in a stepwise fashion, including classroom training in the assembly, disassembly, and maintenance of a device, followed by dry fire and then live fire. Commanders would continue to place the highest priority on the safety of unit personnel and civilians supporting training exercises. Increased use of simulation training would be expected to have a negligible effect on human health and safety.

Many military operations are invariably associated with at least some level of risk of adverse effects on soldiers' health and safety, including but not limited to training, deployment, and vehicle operation and maintenance. Increased military traffic on public roads between the Fort Polk Main Post and Peason Ridge would accompany the proposed action. When military actions are conducted in areas accessible to the public, such as public roadways, the risk associated with the operations could extend to civilian personnel. Risks to the public and military personnel inherent in training, deployment, and day-to-day operations would be minimized or avoided through adherence to existing Army-wide, unit and installation, and other applicable safety regulations and procedures.

New vehicles, weapon systems, and equipment that would be used have been safety-tested throughout the development process and have been approved for use by the Army. Troops that would participate in proposed training, deployment, and day-to-day operations would have been provided extensive training on the new equipment, including Stryker IAVs and TUAVs. Precautions would be taken during training activities to prevent injuries to soldiers. If injuries were to occur as a result of military operations or training, existing procedures for timely medical evaluation and treatment of soldiers would be implemented. Similarly, appropriate military or civilian emergency, medical, or response personnel or facilities would be summoned to attend to any injuries or hazardous exposures sustained by nonmilitary personnel.

Under the proposed action, the possibility exists that hazardous wastes or hazardous materials such as lead, UXO, military munitions, solvents, fuels, or other chemicals could result in increased risk for adverse effects on public health following off-site migration. To address such concerns, the Army has implemented the Army Installation Restoration Program (IRP), a regulatory system similar to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or Superfund). The IRP provides a uniform, thorough methodology to evaluate past disposal sites, control the migration of contaminants, minimize potential hazards to human health and the environment, and clean up contamination. Through the IRP and in concert with regulatory agencies and the public, the Army takes appropriate response actions to address contamination of potentially affected environmental media, including groundwater, surface water, and soil. The specific actions taken by the Army to prevent future contamination of environmental media by explosives, new chemicals, or existing contamination are based on the Army's strict adherence to the requirements of the Resource Conservation and Recovery Act (RCRA), the application of the Pollution Prevention Act to systems acquisition and a host of day-to-day operation and maintenance activities, and the Army's sustainable environment ethic.

Live-fire facilities at the DMPBAC would be designed in accordance with requirements of the Munitions Action Plan (DoD, 2001). As a result, ranges proposed for construction under the proposed action would include full consideration of the impact area, firing fan, and safety buffer requirements to enhance soldier safety and reduce or minimize potential environmental effects from weapon training. Increases in risks to the safety of the public would not be expected in association with new live-fire facilities at the DMPBAC because the facilities would be inaccessible to the public and designed to minimize safety and health risks. All proposed firing ranges or other areas in which live ammunition would be used are proposed to be located on Army-owned lands on Peason Ridge that are inaccessible to the public and at sufficient distances from the post boundaries to ensure that stray rounds would not present a realistic risk to nearby residents or users of the KNF. For example, the proposed sites of the Live-Fire Villages, Urban Assault Village, and Shoot House are each at least 1.5 miles from the nearest post boundary. For other areas (in which live fire is not proposed), the Army would be subject to restrictions currently in place regarding material, vehicle, and equipment safety, and therefore no increases in risks to public health and safety would be expected.

Construction of new facilities would result in direct adverse effects on human health and safety because construction, demolition, and repair of new and existing buildings, roads, and ranges would be accompanied by proportionate increases in risk with respect to accidents and worker safety. However, no adverse effects on the health and safety of the public would be expected in association with the construction of new facilities because the public would not have access to construction sites or be involved in construction activities.

Direct beneficial effects would be expected in association with the acquisition and fielding of new systems like the Stryker IAVs because the MANPRINT program, designed to make equipment safer and more user friendly, would be applied in their development, testing, production, fielding, and decommissioning. Further, new systems would feature equipment-specific safety procedures designed to enhance operator safety and to minimize environmental effects, as appropriate. AR 385-10 (*The Army Safety Program*) and AR 40-5 (*Preventive Medicine*) would provide guidance for the selection and acquisition of new systems and equipment.

Some low increases in public health hazards from potential exposures to lead or chemicals associated with spent munitions or UXO could occur if environmental migration pathways, such as groundwater, surface water, dust, or soil, exist. Potential public health hazards from chemical exposures would be minimized by locating range facilities in areas where environmental transport media such as surface water and streams are not present and designing range facilities in such a way as to minimize potential off-site migration. Such design features might include clay liners beneath impact areas to prevent migration to groundwater, building materials that would minimize formation of dust, and periodic removal or remediation of materials that accumulate or contain spent rifle rounds, UXO, or military munitions.

Risks to the health of soldiers and on-site civilian workers would be expected to increase slightly from exposures to lead and other chemicals present in spent rifle rounds and explosions of UXO and military munitions at firing ranges and artillery impact areas associated with the proposed action. Increased exposures of soldiers to lead and other chemicals during live-fire exercises or operations at or near firing ranges or artillery impact areas would be associated primarily with inhalation in ambient air and ingestion of dust or soil. Potential health and safety risks to soldiers and on-site workers would be reduced through safety training, effective risk communication, and effective management or periodic removal of spent ammunition, UXO, and military munitions in areas where exposures could occur.

At least some risk of adverse effects on human health and safety is present anywhere that hazardous materials like fuels, solvents, and explosives are used or hazardous wastes are generated, including the DMPBAC under the proposed action. Hazardous materials or wastes that are released, leaked, or spilled onto the ground can migrate through soil into groundwater; run off into surface water bodies; enter air as dust, fumes, or volatile chemicals; or remain in soil, where exposures can occur. Under the proposed action, some risks are involved because the use of fuels, solvents, chemicals, munitions, and other hazardous materials is necessary in training activities, creation of mission enhancements, and many day-to-day Army operations such as vehicle maintenance and deployment. Health and safety risks associated with accidental discharges or spills of hazardous materials or hazardous wastes would be minimized by continued strict adherence to procedures and policies outlined in the *Fort Polk Environmental Guidebook* and other applicable guidance. More information about the management of hazardous waste and hazardous materials at Fort Polk under the proposed action is presented in Section 4.13, Hazardous and Toxic Materials/Wastes.

Hazardous wastes and hazardous materials that could result in adverse effects on public health if exposures were to occur would be managed under the *Fort Polk Environmental Guidebook*. Hazardous wastes would not be generated or stored in areas accessible to the public, and any spills or releases to environmental media such as groundwater, air, or soil would be addressed in accordance with guidance in the *Fort Polk Leader's Environmental Handbook*; the IRP; and applicable federal, state, and Army regulations. In addition, Fort Polk provides environmental

response training and pollution prevention/waste minimization guidance to soldiers through the Environmental Compliance Officer (ECO) training program and distribution of literature like the *Soldier's Environmental Field Card*.

### *4.11.3 Cumulative Effects*

***Economic Development***. Long-term minor direct and indirect beneficial cumulative effects on the socioeconomic environment would be expected. Construction of the DMPBAC on Peason Ridge would be expected to increase employment and sales volume in the ROI, including timber sales. Additional increases in employment and sales in the ROI could also occur from other current actions and actions planned for the near future, including Army Transformation at Fort Polk, construction and revitalization of family housing on Fort Polk under the Residential Communities Initiative (RCI), the widening of Route 28, and light-industrial business development at England Industrial Airpark. The actions would be concurrent with construction and operation of the DMPBAC. The economic effects of these actions would be expected to last for the duration of the projects, currently estimated as until about 2010, but they could extend beyond that. Current economic projections estimate that between 2000 and 2010, the ROI population will increase by 2.3 percent and total employment will increase by 9 percent. The projections also indicate that the leading employers would still be government, services, and manufacturing (Woods & Poole Economics, 2002). By 2020 the population is expected to increase by 6 percent and total employment by 16 percent (Woods & Poole Economics, 2002). Again the government, services, and manufacturing industries are expected to continue to be the leading employment sectors (Woods & Poole Economics, 2002).

However, the economic benefits expected from construction of the DMPBAC and other projects occurring in the ROI could be partially offset. In November 2001 an EA evaluated the impact of a proposed action to realign Fort Polk to Most Efficient Support Organization (MESO) through implementation of a Whole Base Study and a commercial activities (CA) cost competition decision. The cost competition would result in the selection of either the government's most efficient organization or a contractor proposal to perform selected support activities at the installation.

On December 11, 2002, it was announced that a contractor, AECOM Government Services, Inc., was awarded the contract. The phase-in, or transition period, commenced on January 3, 2003, and AECOM began performance on June 15, 2003 (JRTC and Fort Polk PAO, 2002). The CA process and transition to AECOM Government Services, Inc., will result in a decrease in total military support organization positions, transition of some positions from performance by government personnel to performance by contractor personnel, downgrading of some government employees, and separation of some government employees from their current positions. JRTC and Fort Polk are offering voluntary separation and retirement incentives to give eligible employees options to voluntarily leave government employment. To date, 356 employees have been tentatively approved for Voluntary Separation Incentive Pay (VSIP), of which 185 have been tentatively approved for Voluntary Early Retirement Authority (VERA) (JRTC and Fort Polk PAO, 2002).[1] The actual number of permanent employees who will be involuntarily separated from service is estimated to be about 200 employees or fewer (JRTC and Fort Polk

[1] VSIP is offered to encourage employees to voluntarily retire or resign from federal service and can result in a lump sum payment of up to $25,000. VERA allows employees to retire earlier than otherwise eligible to reduce the adverse impact of a reduction in force (JRTC and Fort Polk PAO, 2002).

PAO, 2002). The adverse economic effects of this action will result in decreases in employment and sales volume in Vernon Parish. However, the EA completed in November 2001 that evaluated the effects of the realignment of Fort Polk to the MESO concluded that there would be no significant effects on the ROI economy as a whole.

In summary, the cumulative effects of the actions are difficult to quantify because the construction cost estimates and changes in employment and income are not available for actions beyond the proposed action. As noted above, the positive economic benefits of the construction of the DMPBAC, plus the economic benefits of other actions in the ROI (transformation, RCI, construction on Route 28, and business development at England Industrial Airpark) would be offset to some extent by the ongoing CA process, resulting in a cumulative minor economic effect on the ROI.

***Timbering***. In addition to the Army's clear-cutting 914 acres and thinning 2,285 acres for DMPBAC construction, under a separate action the Forest Service has proposed to conduct timber thinning to enhance RCW habitat on 16,800 acres of the Vernon Unit IUA to the south of the Fort Polk cantonment area. Although the Forest Service's thinning would be implemented over a 10-year period, the sum of concurrent timber management operations in the region by both public and private entities would be expected to increase the amount of timber for sale in the region. The sale of timber would be beneficial to the financial health of a parish, but the level of economic activity generated by the clear-cutting and thinning cannot be predicted, nor can the allocation of future tax receipts from the sale to parish public service budgets.

***Public Recreation***. Long-term minor direct adverse cumulative effects on public access and the quality of recreational experiences would be expected. The construction of the DMPBAC at the Peason Ridge training area, other proposed actions, would increase the number of military training days on the IUA, the Main Post, Peason Ridge, and the LUA. The number of recreational visitor days (RVDs) would be reduced. Co-use between the military and the public would, however, remain the norm for the LUA. The SLUA would not be affected because public use of the SLUA is not restricted and is not subject to military training schedules. Potential cumulative impacts to recreation and access to private lands were addressed in section 4.15.2.7 of the Decision Notice and Final Appendices to Environmental Assessment for Increased Military Training use of the Vernon Unit, Calcasieu Ranger District, Kisatchie National Forest dated September 2000. However, because there are no private in holdings associated with this proposed action, this action does not cumulatively add to the impact identified in the September 2000 decision document.

### *4.11.4 Best Management Practices and Environmental Stewardship*

Under the no action alternative, the SOPs listed below would continue to be applied to ongoing and future activities that might affect public recreation or public health and safety on Peason Ridge.

- Continue to access training areas for public use at weekly Resource Allocation Conferences.
- Continue to allocate training lands for public recreation on the first day of hunting seasons and during popular either-sex deer seasons.
- Continue strict adherence to applicable safety regulations and procedures.

Under the proposed action, the possibility exists that hazardous wastes or hazardous materials such as lead, UXO, military munitions, solvents, fuels, or other chemicals could result in increased risk for indirect adverse effects on public health following off-site migration. To address such concerns, the Army has implemented the Army IRP, which is described in Section 4.11.2.7.

Some low long-term increases in public health hazards from potential exposures to lead or chemicals associated with spent munitions or UXO could occur if environmental migration pathways, such as groundwater, surface water, dust, or soil that could result in exposure by the public, exist. These increases in hazards would be congruent with increases in use or levels of hazardous materials associated with the proposed action. Potential public health hazards from chemical exposures would be minimized by siting range facilities in areas where environmental transport media such as streams and other surface waters are not present and by designing range facilities in such a way as to minimize potential off-site migration.

Risks to the health of soldiers and on-site civilian workers would be expected to increase slightly from exposures to lead and other chemicals present in spent rifle rounds and explosions of UXO and military munitions at firing ranges and artillery impact areas associated with the proposed action. Increased exposures to lead and other chemicals by soldiers during live-fire exercises or operations at or near firing ranges or artillery impact areas would be primarily associated with inhalation in ambient air and ingestion of dust or soil. Potential health and safety risks to soldiers and on-site workers would be reduced through safety training, effective risk communication, and effective management of spent ammunition, UXO, and military munitions in areas where exposures could occur.

At least some risk of adverse effects on human health and safety is present anywhere that hazardous materials, such as fuels, solvents, and explosives are used or hazardous wastes are generated, including at Peason Ridge under the proposed action. Under the proposed action, some risks are involved because the use of fuels, solvents, chemicals, munitions, and other hazardous materials is necessary in training activities, facility construction, and many day-to-day Army operations, such as vehicle maintenance and deployment. The proposed action does not present any new, unique risks to public health and safety associated with the use of hazardous materials; rather, all increases in risk would be in accordance with increases in use, storage, and transportation of hazardous materials. Health and safety risks associated with accidental discharges or spills of hazardous materials or hazardous wastes would be minimized by continued strict adherence to procedures and policies outlined in the *Fort Polk Environmental Guidebook* and other applicable guidance. More information about the management of hazardous waste and hazardous materials at Fort Polk under the proposed action is presented in Section 4.13, Hazardous and Toxic Materials/Wastes.

Hazardous wastes and hazardous materials would be managed in accordance with guidance presented in the *Fort Polk Environmental Guidebook*, described in Section 4.13. Hazardous wastes would not be generated or stored in areas accessible to the public, and any spills or releases to environmental media such as groundwater, air, or soil would be addressed in accordance with guidance in the *Fort Polk Leader's Environmental Handbook*; the IRP; and applicable federal, state, and Army regulations. In addition, Fort Polk provides environmental response training and pollution prevention/waste minimization guidance to soldiers through the ECO training program and distribution of literature like the *Soldier's Environmental Field Card*.

## 4.12 TRANSPORTATION AND INFRASTRUCTURE

### 4.12.1 No Action Alternative

No new or additional effects on transportation and traffic, water supply, sewage treatment, solid waste management, utilities, or airspace and air traffic would be expected.

### 4.12.2 Proposed Action Alternative

#### 4.12.2.1 Road Conditions and Traffic Levels

Long-term minor adverse effects on road conditions would be expected from implementation of the proposed action. Wear and tear on surrounding roads would increase as construction vehicles enter and exit Peason Ridge during the construction phases of the project. Frequent maintenance and rehabilitation of roads would minimize the effects of increased stress and prevent pavement failure.

Short-term minor adverse effects on traffic levels would also be expected with implementation of the proposed action. During construction and land clear-cutting activities, traffic increases could occur, particularly during rush hours, as construction-related vehicles enter and exit Peason Ridge or transport construction-related debris from the project sites to regional landfills. As construction-related vehicle traffic increases around Fort Polk, the LOS on surrounding roads would decrease during periods of the day with high construction vehicle activity. Such effects could be mitigated by minimizing construction vehicle movement during peak rush hours.

#### 4.12.2.2 Airspace and Air Traffic

The proposed construction of the DMPBAC could indirectly and adversely affect airspace and air traffic within Warrior MOA1 and Track 1-A. Enhanced ground-based training ranges and facilities could increase the number of calls for fire support by attack aircraft, thereby potentially increasing both the number of aircraft and the frequency of flights in the MOA. Additionally, if the number of training and rotational exercises conducted at Peason Ridge were to increase due to the construction of the proposed DMPBAC, the general use of aircraft to support these training exercises would also increase. This increase would cause indirect and adverse effects on airspace by increasing the requirements for airspace use and the intensity of air traffic within that airspace during training exercises.

The increased use of existing airspace would result in short-term direct minor adverse effects on that airspace. It would be used more often and more intensively, with a larger variety of types of aircraft systems, all with different operating specifications, operating simultaneously. The effects would be short-term because the existing airspace would be affected by only the brief, intense activities of deployment exercises and routine training exercises of varying intensities. The effects would be minor because the proposed level and duration of airspace use would not be substantially higher than the current levels and duration of use. As with current operations, all air operations under the proposed action would be conducted under FAA regulations and general operating and flight rules. These factors would result in greater use of the SUA over and adjacent to the JRTC and Fort Polk, which would demand greater coordination between Fort Polk ATC and other ATC organizations.

#### *4.12.2.3 Water Supply*

Long-term minor adverse effects would be expected from implementation of the proposed action. Additional potable water infrastructure and personnel would be needed to support facilities under the four principal building construction projects associated with the DMPBAC. These additional buildings and support personnel, along with soldiers participating in training activities, would increase the demand for potable water at Peason Ridge. It is anticipated that water use at the DMPBAC would be approximately 3,038 gallons per day during range use (Polyengineering, Inc., 2002). The East Central Vernon Waterworks' Kurthwood Well is operating at 50 percent of its 1.55-MGD capacity, indicating that more than 700,000 gallons per day of potable water is available. It would be expected that the potable water system would be able to handle all increases in demand due to an increase in personnel, soldiers participating in training, and the construction of the four principal buildings associated with the DMPBAC. No water pressure problems associated with delivering potable water to the DMPBAC are anticipated (Jeane, personal communication, 2002).

#### *4.12.2.4 Sewage Treatment*

Long-term negligible adverse effects would be expected from implementation of the proposed action. Additional wastewater infrastructure and personnel would be needed to support facilities under the four principal building construction projects associated with the DMPBAC. These additional facilities and support personnel, along with soldiers participating in training activities, would increase the production of wastewater at Peason Ridge. It is anticipated that 70 percent, or approximately 2,100 gallons, of the potable water supplied to the DMPBAC during training activities would end up in the wastewater treatment system. The Peason Ridge Sanitary Sewage Treatment Facility is capable of processing 2,400 gallons of sewage per day and has a total storage capacity of 1.5 million gallons. It would be expected that the wastewater treatment system would be able to handle all increases in demand due to an increase in personnel, soldiers participating in training, and the construction of the four principal buildings associated with the DMPBAC.

#### *4.12.2.5 Solid Waste Management*

Negligible long-term adverse effects would be expected from implementation of the proposed action. To accommodate the DMPBAC, several supporting facilities are required to serve the needs of personnel during training activities. Based on the current proposed projects, it is estimated that approximately 25,000 square feet of new construction would be needed for operation of the DMPBAC. Using a new C&D factor of 4.38 pounds per square foot, approximately 25 tons of construction-related debris would be produced from the proposed projects. The IESI landfill that Fort Polk uses disposes of approximately 800 tons per day of total debris and is expected to be in operation another 68 years (Lewis, personal communication, 2002). Applying this rate of disposal to the total amount produced by DMPBAC construction activities, it is expected that the life expectancy of the IESI landfill would be decreased by less than 1 day. The actual amount of disposed waste would be reduced because of recycling practices. Fort Polk recycled 99 percent of the C&D waste generated in 2000. In addition, there are plans to extend the current IESI landfill permit for an unspecified number of years (Lewis, personal communication, 2002).

#### *4.12.2.6 Electricity*

Long-term minor adverse effects would be expected from implementation of the proposed action. Additional electrical infrastructure and personnel would be needed to support facilities under the four principal building construction projects associated with the DMPBAC. These additional facilities and support personnel, along with soldiers participating in training activities, would increase the demand for electricity at Peason Ridge. Approximately 25,000 square feet of the building space constructed would require electricity capabilities. Annual electricity use per square foot of building space was 0.024 megawatt-hours (MWH) in 2000. This usage would correlate to an increase in demand of approximately 600 MWH per year due to newly constructed infrastructure.

Since 1990 the total electricity demand of Fort Polk has decreased by approximately 7.5 percent. It is expected that increased demand due to additional infrastructure at Peason Ridge could be handled by the existing electrical system infrastructure.

### *4.12.3 Cumulative Effects*

Minor adverse cumulative effects on transportation and infrastructure would be expected due to implementation of the proposed action, when combined with Army Transformation and the widening of LA 28. An increase in training activities both at Peason Ridge and Fort Polk would be expected to decrease both the conditions and LOS on surrounding roads. LA 117 would be expected to experience the greatest increases in ADT as it is the primary access to both Peason Ridge and the SLUA. The construction and upgrading of training facilities would be expected to increase the production of solid waste, increase the demand for utilities, and further decrease the conditions and LOS on surrounding roads. During the widening of LA 28, construction activities could create additional delays and reduce the roadway LOS. As LOS decreases on LA 28, it would be expected that travelers using this route might choose alternate east-west routes, including LA 121, LA 8, and LA 465, to bypass congestion on LA 28 and further reduce LOS on other east-west thoroughfares.

Minor beneficial cumulative effects on transportation would be expected due to the widening of LA 28. The widening of LA 28 would increase capacity and would likely increase LOS. This would ultimately decrease delays and increase driver safety.

### *4.12.4 Best Management Practices and Environmental Stewardship*

BMPs for transportation include conducting frequent maintenance and rehabilitation of installation roads to prevent pavement failure and minimization of off-road activity. Infrastructure BMPs include the installation of energy-efficient lighting fixtures (interior and exterior) and water-efficient control devices in all new facilities.

## *4.13 HAZARDOUS AND TOXIC MATERIALS/WASTES*

### *4.13.1 No Action Alternative*

Under the no action alternative, no adverse effects from hazardous and toxic materials/wastes would be expected relative to baseline conditions. Currently, hazardous materials and hazardous waste are managed by various post personnel, primarily through the ENRMD. The ENRMD publishes a *Hazardous Waste Management Plan* and an *Oil and Hazardous Substances*

*Contingency Plan*. These documents provide standard operating procedures for the collection, storage, transport, and disposal of hazardous materials and waste. The installation's SWMUs are regulated under LDEQ's RECAP program and have been evaluated accordingly. Management of hazardous wastes is strictly regulated under Title 33 of the *Louisiana Administrative Code*, as well as RCRA, contained in Title 40 of the *Code of Federal Regulations*. Hazardous materials management is regulated by OSHA under Title 29 of the *Code of Federal Regulations* Part 1910, Subpart H. Waste minimization is a requirement of these regulations; therefore, the quantity of hazardous waste generated at the installation would presumably decrease over time. However, it is unlikely that the facility will ever reduce the amount of hazardous waste to below the regulated threshold. Therefore, assuming that the responsibility for the management of hazardous waste and SWMUs would remain within the same organization of trained professionals (Fort Polk ENRMD), hazardous materials and waste management should not be affected under the no action alternative.

### *4.13.2 Proposed Action Alternative*

#### *4.13.2.1 Storage, Handling, and Use*

Minor adverse effects associated with the storage, handling, and transport of hazardous materials and wastes in these areas would be expected. Of these effects, the most noteable would likely be associated with the inherent risk of a release or accident involving the storage or transfer of fuels in USTs or ASTs. In addition to training facilities like the assault village, several facilities associated with the proposed action would likely include at least some level of storage and handling of hazardous materials and waste. These facilities would include the proposed vehicle fueling area in the DMPBAC, where fuels would be stored and transferred in bulk; the proposed maintenance building, where paints, solvents, POLs, and other hazardous materials would be stored and used; and the battery storage facility. Hazardous wastes generated at the DMPBAC, such as spent batteries and waste associated with maintenance activities, would not be stored on the DMPBAC for longer than 90 days at a time.

Because the DMPBAC facilities would be constructed in an area currently free of existing structures, no adverse effects associated with demolition or site preparation activities would be expected. Short-term direct minor adverse effects would be expected during construction activities because hazardous materials would be used, stored, and disposed of in connection with these activities. However, construction activities would be subject to existing comprehensive Army environmental policies, regulations, and guidelines, which, in the past have proven to be adequate to provide for their management in an environmentally sound manner. Activities would follow the label instructions for storage, use, application, and disposal in accordance with proper hazardous material management guidelines. Large-scale use of herbicides in the preparation of the site for construction of DMPBAC facilities is not proposed.

#### *4.13.2.2 Munitions and Unexploded Ordnance*

Direct minor adverse effects are expected from the proposed use of the DMPBAC as a state-of-the-art weapons training facility. Use of the DMPBAC would include the temporary storage and use of various munitions and ammunition in designated areas within the DMPBAC facilities. Munitions use and associated wastes would be expected to occur in most, if not all, of the training facilities proposed for the DMPBAC, including the battle area course, shoot house, breach facility, urban assault course, and live-fire villages.

Direct adverse effects would be expected from the inevitable presence of unexploded ordnance (UXO) in the range area following live-fire exercises. Particular public health concerns associated with munitions training areas and firing ranges at current and former military training centers, such as Peason Ridge and the JRTC and Fort Polk, involve the potential environmental health effects from exposures to and mishandling of lead, UXO, and used or unused military munitions to soldiers, workers, and the public. Numerous studies have documented that potentially hazardous levels of lead, UXO, explosives, propellants, and chemical agents can be found in on-site and off-site groundwater, surface water, soil, and ambient air in and near military ranges. Additional public health concerns can occur when hazardous materials or hazardous wastes not associated with ranges (such as solvents or fuels) are released into the environment and exposures occur.

UXO is military munitions/explosive ordnance that has been primed, fused, armed, or otherwise prepared for action; has been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and remains unexploded because of malfunction, design, or any other cause. Military ranges are designated land or water areas set aside, managed, and used to test and evaluate military munitions and explosives, other ordnance, or weapon systems, or to train military personnel in their use and handling. Ranges include firing lines and positions, maneuver areas where live fire is permitted, detonation pads, impact areas, and buffer zones with restricted access and exclusionary areas. UXO, munitions, chemical residues, and wastes associated with military ranges can present risks to the health and safety of military and civilian personnel through the following:

- Explosion hazards associated with abandoned or discarded military munitions or UXO.
- Explosion hazards associated with soils that have concentrations of explosives high enough to present an explosion hazard.
- Facilities, equipment, or other materials contaminated with a concentration of explosives high enough to present an explosive hazard.
- Exposures to explosives, lead, or other hazardous, toxic, or radiological wastes associated with military munitions or ranges that migrate into groundwater, surface water, ambient or indoor air, soil, or dust.

Most ammunition used in firing ranges is made primarily of lead, which collects as spent rifle bullets and shotgun pellets in berms or backstops into which it is fired. Exposure to lead can result in health problems such as neurological impairment in children and infants and adverse effects on blood formation, urinary, and reproductive systems in adults and children (ATSDR, 1999). Soldiers, workers, or civilians can be exposed to lead by breathing it in air, drinking it in water, eating lead-contaminated food, or ingesting dust or soil that contains lead dust or particles of lead. High levels of lead and incidences of lead poisoning have been found in firearm instructors, range employees, and frequent shooters that have been continually exposed to lead in munitions through inhalation of fumes, ingestion of particles, or direct contact at firing ranges.

The Operational and Environmental Executive Steering Committee for Munitions (OEESCM) of DoD implemented a department-wide Munitions Action Plan (MAP) in November 2001. The MAP is designed to identify actions that will help maintain the combat readiness of U.S. armed forces by enhancing explosives safety and improving environmental stewardship across the complete munitions life cycle (DoD, 2001). Recognizing that the protection of human life is of paramount importance, the MAP is intended to provide a framework by which environmental

policy can complement the safe use of explosives. The MAP outlines requirements and guidance for the following topics related to safe and environmentally sound management of the munitions life cycle:

- ***Acquisition of Munitions.*** Provides guidance on development, procurement, and testing of munitions that meet military performance and operational requirements while enhancing explosives safety and reducing the potential for adverse effects on the environment during the munitions life cycle.
- ***Stockpile Management.*** Provides guidance on management of the total conventional ammunition stockpile to support operational requirements while enhancing explosives safety and reducing the potential for adverse effects on the environment.
- ***Ranges and Munitions Use.*** Provides guidance to sustain and enhance the operational capability of operational ranges (both active and inactive) to meet military readiness and operational requirements while enhancing explosives safety and reducing the potential for adverse effects on the environment.
- ***Demilitarization.*** Provides guidance on the demilitarization of obsolete, excess, and unserviceable munitions and munitions residue according to Congressional and DoD directives while enhancing safety and minimizing the potential for adverse effects on the environment.
- ***Response.*** Provides guidance to promote explosives safety and reduce the potential for adverse environmental effects from UXO, waste military munitions, and munitions constituents on DoD properties.
- ***Stakeholder Involvement.*** Geared to build public confidence and foster more informed decision-making by maintaining a dialogue with stakeholders concerning munitions life-cycle issues that might affect public health, safety, and the environment.

In light of data gaps and lack of technical information regarding the chemical composition and environmental fate and transport of chemicals released during the functioning of munitions, the MAP also directs the Armed Services to test, sample, and collect data on the environmental disposition of munitions. The requirements of the MAP apply to all military facilities and, with conformance, will help to minimize and remove potential human health hazards and risks associated with accidents and environmental exposures to munitions and their chemical components.

Adverse effects associated with UXO that migrates to groundwater are discussed in Section 4.6.2,

#### *4.13.2.3 Compliance*

These actions have the same requirements with respect to compliance with federal and state hazardous and solid waste management laws and regulations. Any hazardous material or hazardous waste used or generated as part of these actions would be managed in accordance with current regulations (as listed above). Existing installation policies and procedures (the *Hazardous Waste Management Plan* and *Oil and Hazardous Substances Contingency Plan*) are sufficient to properly manage any changes in current quantities or disposition of hazardous materials or wastes generated as a product of the proposed action. Activities under the proposed action could affect the quantity of hazardous materials or waste managed on-site; however, as a large-quantity generator, the installation would be able to handle the increase.

### *4.13.3 Cumulative Effects*

Significant cumulative effects will not occur from this or other Army actions because the Army intends to comply with laws governing hazardous and toxic materials/wastes and a significant impact would be to knowingly violate these laws. Minor cumulative adverse effects are expected from the generation of additional hazardous and toxic materials/wastes, those anticipated hazardous and toxic materials/wastes this action are munitions, under the proposed action and as a result of ongoing military and nonmilitary actions (including local highway construction and England Industrial Airpark construction). Limited anthropogenic change and population growth are expected within the ROI over the next 20 years (see Section 4.11). Furthermore, waste minimization efforts and recycling will continue to reduce the generation of hazardous and toxic materials/wastes within the ROI in the future.

4.13.4 Best Management Practices and Environmental Stewardship

Fort Polk routinely undertakes many activities to ensure sound environmental and natural resource stewardship with respect to hazardous and toxic material. See Section 4.13.2.3 for a detailed description of these activities.

The installation has numerous discrete programs based on specific media or resources in place to support environmental objectives and to reduce potential effects from hazardous materials/wastes. These include the Installation Pollution Prevention Program and the Environmental Training Program. For instance, following the conclusion of each training exercise or event, and before units return to garrison, units clean up the areas- used for training. During cleanup periods, units are required to remove solid and hazardous waste from the training areas and to return the land to as natural a state as possible. Installation personnel inspect training areas to assess environmental effects and identify areas in need of repair.

Generation, management, and disposal of hazardous waste from past training activities at Peason Ridge do not present any additional or collective impacts when considered with the hazardous waste generation and disposal anticipated to result from the proposed action. Management of past training hazardous waste generation has been handled in accordance with Federal, State, and Army laws and regulations, and installation hazardous waste handling procedures. Hazardous waste generation resulting from the proposed action will also be handled pursuant to such regulations. Hazardous waste generation and disposal from past training activities and such waste generation and management activities anticipated from the proposed action, taken together, are no expected to produce cumulative hazardous waste effects on the environment.

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# *SECTION 5.0*
# *FINDINGS AND CONCLUSIONS*

## *5.1 CONSEQUENCES OF THE PROPOSED ACTION*

This EA has been prepared to evaluate the potential effects on the natural and human environment from activities associated with the Army's proposal for construction and operation of a DMPBAC at the JRTC and Fort Polk Peason Ridge training area. The EA examined two alternatives in detail, the proposed action as described in Section 2, and the no action alternative.

The EA has evaluated potential effects on land use, air quality, noise, geology and soils, water resources, biological resources, cultural resources, socioeconomics (including environmental justice and protection of children), transportation and infrastructure, and hazardous and toxic materials/wastes. Table 5.1-1 summarizes the potential effects of implementing either the proposed action, or of taking no action, on each of these resource areas or conditions.

**Table 5.0–1**
**Summary of Environmental and Socioeconomic Effects**

| *No Action Alternative* | *Proposed Action* |
|---|---|
| ***Land Use/Land Cover*** | |
| No new or additional effects beyond those due to the continuation of current operations. | Long-term beneficial effects on installation land use would be expected. Long-term direct minor adverse effects on land cover would be expected. Beneficial effects would arise from alleviating training intensity at other range facilities on the Main Post. Adverse effects on land cover would arise from DMPBAC construction and the increased intensity of military activities that would have physical impacts on natural resources. Localized long-term moderate adverse effects on surrounding land use would arise from noise annoyance and increased traffic. |
| ***Geology and Soils*** | |
| No new or additional effects on geologic and topographic conditions, soils, mineral development, or prime farmland would be expected. | Long-term minor localized adverse effects on topography would be expected as a result of the reshaping of land due to earthworks, borrow pits, and construction projects during construction of the DMPBAC. Short- and long-term moderate and long-term minor adverse effects on soils would occur from both DMPBAC construction and training activities. Short-term increases in runoff and erosion would occur during facility construction as a result of removal of vegetation and exposure of erodible soils. Long-term minor adverse effects would occur from clearcutting and thinning the forested land. The expected future average soil loss rate for the proposed site for the DMPBAC would be 6.34 tons per acre per year (t/ac/yr), up from the current 4.48 t/ac/yr. |
| ***Water Resources: Toxics*** | |
| No new or additional effects would be expected on water quality. | Short- and long-term direct and indirect minor adverse effects to in-stream water quality would arise from toxic chemicals. Sediments contaminated by munitions compounds, their by-products, and heavy metals could be deposited to surface waters. |

**Table 5.0–1**
**Summary of Environmental and Socioeconomic Effects**

| *No Action Alternative* | *Proposed Action* |
|---|---|
| ***Water Resources: Sedimentation/Hydrology*** | |
| No new or additional effects would be expected on water quality. | Short-term moderate adverse effects on water quality would occur from soils disturbance during construction that would increase sediment runoff during storm events, though the effects would be minimized by the construction of sediment retention structures. Short-term moderate adverse effects on water quality would occur from road construction, clearcutting and tree thinning, earthwork construction, and range maintenance activities, though the effects will be minimized by construction sequencing; having sediment basins in place before project construction, thinning, or clearcutting begins; adherence to the SWPPP; and implementation of a range management plan. Construction of stream crossings would cause localized short-term direct moderate adverse effects, and arched and low-water stream crossings would result in long-term beneficial effects through hardening and protecting the streambanks and approaches. Short-term localized moderate adverse effects would be expected due to resuspension of sediment when vehicles ford streams using hardened low-water stream crossings. Long-term minor adverse effects to water quality would occur from soil loss from increased training intensity. |
| ***Water Resources: Groundwater*** | |
| No adverse effects on groundwater quality relative to baseline conditions would be expected. | Long-term minor direct and indirect effects would arise from UXO left on ranges and training areas and the use of pyrotechnics, obscurants and fog oil. Long-term direct beneficial effects would arise from updating arms storage facilities and ammunition supply points. Short-term minor adverse effects could occur due to fuel and hazardous materials spills. |
| ***Biological Resources: Vegetation/Forestry*** | |
| No new or additional effects on vegetation or forestry would be expected. | Short- and long-term moderate adverse effects would occur from the permanent conversion of 914 predominately forested acres. Long- and short-term direct minor adverse impacts would arise during DMPBAC construction from vegetation clearing and loss. Long-term direct minor adverse impacts would arise from DMPBAC operation due to trampling of vegetation. No new or additional effects on forest management would be expected. |
| ***Biological Resources: Aquatic Life, Wildlife, and MIS*** | |
| No new or additional effects on wildlife, aquatic life, or MIS would be expected. | Long-term minor adverse effects on wildlife and sensitive species would be expected. Short-term moderate adverse effects on wildlife would occur during the construction phase of the project, though adverse impacts from construction would be offset by long-term benefits from creating open canopy forest and frequently disturbed, low-quality grassland. Edge habitat species would benefit. Some direct wildlife mortality during construction and training would occur. Short-term direct minor adverse effects on longleaf pine MIS would occur from the loss of forested habitat, though short-term benefits would arise from thinning. |
| ***Biological Resources: Protected, Endangered, Threatened, Sensitive, and Conservation Species (PETSC)*** | |
| No new or additional effects on PETSC species would be expected. | Long-term indirect minor benefits to the RCW would occur due to forest thinning. Long-term indirect minor benefits to the Louisiana pine snake would occur from the creation of additional open longleaf forest. |

**Table 5.0–1**
**Summary of Environmental and Socioeconomic Effects**

| *No Action Alternative* | *Proposed Action* |
|---|---|
| ***Biological Resources: Wetlands*** | |
| No new or additional effects on wetlands would be expected. | Short- and long-term localized moderate adverse effects would arise from constructing low-water stream crossings and sediment basins in riparian corridors and from range operations. An estimated 1.0 acre of wetlands could be adversely affected. |
| ***Cultural Resources*** | |
| No direct or indirect effects on cultural resources would occur. | Short-term minor adverse effects could occur if soil disturbance and excavations were to inadvertently disturb known archaeological sites or as-yet-unidentified archaeological or paleontological sites. No Native American resources, such as traditional cultural properties, or paleontological resources are known to be present in the project area. |
| ***Noise Levels*** | |
| There would be no appreciable change to the ambient noise levels at Fort Polk. | Periodic short-term moderate adverse effects on the noise level would occur during construction and operation of the DMPBAC. Long-term direct minor to moderate adverse effects would arise from off-post peak noise levels that would exceed 90 dB at times, varying with munitions and weather conditions. The frequency of noise complaints would increase. Short-term adverse minor effects would occur near the Helicopter Flight Zone and the associated flight paths. |
| ***Air Quality*** | |
| No effect on air quality would occur relative to baseline conditions. | Long-term minor adverse effects on air quality would occur from military training and operations over the next 20 years. Emissions in excess of those currently emitted would result from additional cleaning operations; aircraft flights; engine run-ups; vehicle operation; use of diesel engines, ground support equipment, and munitions and obscurants; BIDS training; equipment maintenance; and fugitive emissions resulting from military field training exercises. |
| ***Socioeconomic Conditions*** | |
| No new or additional effects would occur relative to baseline conditions. | Short-term direct and indirect moderate beneficial effects would arise from increasing ROI sales volume, income, and employment with the construction of the DMPBAC and associated facilities. Most economic benefits would last for only the duration of the construction period. Long-term minor beneficial effects on the local economy from timbering could occur. Localized long-term moderate adverse effects as decreased property values near the perimeter of the DMPBAC could occur from noise annoyance and increased traffic.<br>Long-term minor direct adverse effects on public access and recreational value would arise from a decrease in recreational visitor days. No effects would be expected on environmental justice or protection of children. Effects on public health and safety could range from minor adverse, associated with increased operations training, exposure to hazardous waste or hazardous materials, and safety risks during construction; to minor beneficial, associated with increased safety training. |

**Table 5.0–1**
**Summary of Environmental and Socioeconomic Effects**

| *No Action Alternative* | *Proposed Action* |
|---|---|
| ***Transportation and Infrastructure*** | |
| No new or additional effects on transportation and infrastructure would occur relative to baseline conditions. | Long-term minor adverse effects on road conditions would result from wear and tear, though frequent road maintenance and rehabilitation would minimize the effects. Short-term minor adverse effects on traffic levels would occur during construction.<br>Short-term direct minor adverse impacts on airspace would result from the airspace being used more often and more intensively.<br>Long-term minor adverse effects on water supply would result during DMPBAC operation from additional personnel, though the potable water supply is sufficient to meet the demand.<br>Long-term negligible adverse effects on sewage treatment would result, though the wastewater treatment system would be able to handle all increases in demand.<br>Negligible long-term adverse effects on solid waste management would occur from construction and additional personnel.<br>Long-term minor adverse effects on electricity supply would occur due to additional electrical infrastructure and personnel needed to support facilities, though the increased demand would be handled easily by the existing electrical system infrastructure. |
| ***Hazardous and Toxic Materials/Wastes*** | |
| No adverse effects from hazardous and toxic materials and wastes would be expected relative to baseline conditions. | Short- and long-term minor adverse effects associated with the storage, handling, and transport of hazardous materials and wastes at the vehicle fueling area, maintenance building, and battery storage facility would be expected. Direct minor adverse effects would arise from the temporary storage and use of various munitions and ammunition on the DMPBAC. |
| ***Cumulative Effects*** | |
| No new or additional effects would be expected relative to baseline conditions. | Minor beneficial effects on land use from construction and operation.<br>Long-term direct beneficial effects to endangered species, specifically the Red-Cockaded Woodpecker.<br>Minor adverse effects on land cover, soils, public access, recreation, transportation and infrastructure, and hazardous and toxic materials/wastes from operation.<br>Short-term minor adverse effects on forest vegetation and associated ecosystems, forest wildlife, wetlands, and cultural resources from construction and operation.<br>Long-term minor adverse effects water quality, groundwater, and air quality from operation.<br>Short-term moderate adverse effects from noise during operation.<br>Long-term moderate adverse effects to water quality from operation. |

## *5.2 MITIGATION*

No specific mitigation measures are recommended for the types of effects identified; rather, these effects would be addressed through adherence to best management practices and through the JRTC and Fort Polk's aggressive program of land management and environmental stewardship.

Specific stewardship measures or initiatives are discussed in Section 4.0 of the EA following presentation of the environmental consequences expected for each resource area or condition

## *5.3 CONCLUSIONS*

Based on the findings of the EA, implementation of the proposed action would not result in significant effects to the quality of the human or natural environment; therefore, preparation of an Environmental Impact Statement is not required. Publication of a Finding of No Significant Impact is recommended.

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Larue Parker
Chairwoman
Caddo Tribe of Oklahoma
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# APPENDIX A

# SCOPING COMMENT MATRICES

| DMPBAC EA SCOPING COMMENT MATRIX<br>FOR JRTC AND FORT POLK, LOUISIANA | | | | |
|---|---|---|---|---|
| **Name** | **Address** | **Affiliation** | **Comment** | **Response** |
| Dr. Randall H. Stovall | LSUA 8100 Hwy 71 South<br>Alexandria, LA 71302 | Rapides Parish | I have no direct knowledge regarding the direct environmental and/or socioeconomic effects that would immediately accrue as a result of these actions. I do believe that the long-term environmental impact would probably not exceed those already experienced by other uses of the Fort Polk facility. The regional socioeconomic effects of expanding activities at Fort Polk will undoubtedly be beneficial. Additional capabilities and exercises for Fort Polk ultimately translate into additional jobs and greater overall revenue generation for Central Louisiana. | See Sections 3.11 and 4.11, respectively. |
| Rickey Robertson | 22 Peason Road<br>Elorien, LA 71429 | Sabine Parish | I am completely against the building of a new type of gunnery range at Peason. Ever since the JRTC has been at Ft. Polk, they have done away with the safety fans for munitions that had been used by the USAF and the Army's 5th Infantry. While the aircraft from old EAFB would bomb and strafe, they would shoot into the heart of the impact area. They only used small munitions as compared to what will be used on a new range. Each rotation artillery units set up at the Haynes Village area which is about 1 ½ miles from my front door. Have you ever been jarred out of bed at 5 o'clock in the morning by howitzers firing or attack helicopters blowing leaves out of the trees in your yard? Come and visit with us sometime. When Col. Hutchinson, the first garrison commander for the JRTC met with the people of this area several years ago, he stated that the JRTC would work with the people in the surrounding communities, and would keep the training to a | See Sections 3.9. 3.11, 4.9.2, and 4.11. |

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| **Name** | **Address** | **Affiliation** | **Comment** | **Response** |
| | | | minimal and that everything would be safe.<br>Peason Range came into being in 1941 for the Louisiana Maneuvers and was used during WW II, Korea, and Vietnam. Units were in the field there, but of importance, smaller unit tactics were taught. Also, the weapons and munitions were small caliber and were not fired in excess during the training. However, since the JRTC has been training units there, the munitions and weapons have become more sophisticated and more deadly. Now, heavy artillery, missiles of various types, and all types of small arms are fired in excess in the training on Peason. Again, people do live on the surrounding areas of this area and will be subject to noise, stray rounds impacting near them, more vehicular traffic, etc.<br><br>Peason Ridge is known far and wide as a habitat for many type of wildlife and sportsmen enjoy hunting this game. Each time you create more battle courses and clearings of habitat, you are destroying the game, the water, the air, and the complete environment.<br><br>As far as this battle course, I am against it completely.<br><br>The people of this area have always supported the military every way that they could, beginning in 1941. Units over the years have assisted our little community and it's people, and always took into consideration our living near this area. When will the JRTC start considering us? | See Sections 4.9.2, and 4.12.2.1<br><br>See Sections 4.6, 4.7, and 4.10 |

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|---|---|---|---|---|
| **Name** | **Address** | **Affiliation** | **Comment** | **Response** |
| Bill Ridgeway | 1310 W. Camellia Dr.<br>Thibodaux, LA 70301<br>985-448-3768<br>Ridghog@cs.com | Recreational User | I do not believe that there are any DHV trails in the Peason Ridge Area. Therefore, I am not directly affected. However, I would again hope that the military exercises do not cause extensive environmental damage. If so, they should repair the area to an acceptable condition. | Comment noted. |
| Dr. A. B. Osborn | P.O. Box 550<br>Elizabeth, LA 70638 | Environmental Org. | We will be checking on future impact as we visit these areas in the years to come. | See Section 4.0. |
| George & Frances Jeuban | 1888 Glendale Rd.<br>DeRidder, LA 70634 | Beauregard Parish | As far as we are concerned the exercise will not affect the Beauregard Parish area in a negative manner. | Comment noted. |
| Jesse Knowles & wife | 636 W. LaGrange St.<br>Lake Charles, LA 70605 | Lake Charles Armed Forces Comm. | No Objection. I support | Comment noted. |
| Colonel Warren S. Anderson | 707 S. Texas St.<br>DeRidder, LA 70634-4751 | Beauregard Parish | Go for it, Great Economic impact. | Comment noted. |
| Reginald H. Hathorn, Jr. (Major, USAF, retired) | 5819 Joyce Street<br>Alexandria, LA 71302 | U. S. Army | Highly recommend the DMPBAC be constructed and operated to provide as much opportunity for Army personnel to engage in active live fire training as is deemed necessary by Commanders. | Comment noted. |
| John D. Mayronne | 320 N. Third St.<br>Covington, LA 70433 | Civic Org. | How could insect infestations be managed (pine beetles, etc.) assuming these areas would be permanently off limits? Would there be any toxic materials that could affect water systems (ground or surface) and/or air quality?<br><br>Concern for damaging sensitive and rare plant communities and habitat for rare fauna. Concern with erosion degradation and sedimentation of wetlands and other water systems, i.e. rivers, creeks, | See Section 4.6.2 and 4.7. |

| DMPBAC EA SCOPING COMMENT MATRIX<br>FOR JRTC AND FORT POLK, LOUISIANA | | | | |
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| **Name** | **Address** | **Affiliation** | **Comment** | **Response** |
| | | | etc.<br><br>With the increasing population would the areas resources – commercial and recreational available or would the site be made inaccessible into eternity with the threat of unexploded weapons of war? | |
| Charles R. Villarrubia | 11580 Perkins Road #15<br>Baton Rouge, LA 70810-1939 | | This is my old address. Please drop me from your notification list. | Comment noted. |
| Randy Miller | Box 3164<br>Lake Charles, LA 70602 | 5-Parish Planning Commission | We do not foresee any adverse impacts on the proposed activity. | Comment noted. |
| Foster Walker | 1616 MacArthur Dr.<br>Alexandria, LA 71315 | Rapides Parish | I support all of your training at Ft. Polk. | Comment noted. |
| Mr. & Mrs. Robert Rose | 102 E. North St.<br>Leesville, LA 71446 | Vernon Parish | We are excited Ft. Polk can play such a pivotal role in the defense of our country & pledge our support to make this area as good a neighbor as possible for these DOD efforts. | Comment noted. |
| Joey Bollinger | P. O. Box 1727<br>Leesville, LA 71496 | Rapides Parish | Peason Ridge is a great asset to the Army and I feel it has been under utilized for years.<br>I am in full support of Ft. Polk and the efforts to have and prepare a transformed Army to meet the demands of the 21st century. | Comment noted. |
| W. G. Beauregard, M.D. | 1100 McMillan Road<br>West Monroe, LA 71291 | Environmental Org. | I consider this Army light infantry brigade level training to be of the utmost importance and for that reason support the initiative. However, the environmental impact should be monitored on a long-term basis rather than simply with original construction. | See Section 4.0 |
| Margaret Ann Osborn | P. O. Box 550<br>Elizabeth, LA 70638 | Environmental Org. | Future environmental impact on U.S. Forest Service lands. Although I realize the need for military | |

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| **Name** | **Address** | **Affiliation** | **Comment** | **Response** |
| | | | training and certainly am not against military preparedness. I do have concerns about the use of heavy machines, especially in the areas of Kisatchie Forest used by the Army under the Special Use Permit. In order to understand the Army's plan more completely, I need a map outlining the planned areas of use. Some of these areas are habitat for a variety of sensitive plant and animal life that will most assuredly be impacted by armored vehicles over an extended period of time. Since my husband and I frequent all of the Kisatchie Forests in our quests of photographing wild flowers and birds, we are aware of the disruption and destruction that can occur. There are many pitcher plant bogs that contain rare and sensitive plants, including several fragile orchid varieties that are disappearing from our state. Although I appreciate the fact that Fort Polk is making an effort to protect the environment, I have to be skeptical in light of the events in recent years when the military tried to confiscate several Kisatchie areas for their own use - shutting the public out of land that had been set aside for the enjoyment of the people. I'm sorry my comments are so extensive, but this is a topic very close to my heart. Again, thank you for soliciting advice from concerned citizens. | See Sections 3.7 and 4.7, respectively. |
| CSM(R) Jack Hardwick | 217 KVVP Drive<br>Leesville, LA 71446 | Vernon Parish | I think the ranges will be needed to maintain the force. Soldiers must practice with their new vehicles and weapons as well as the old. | Comment noted. |
| Central Louisiana Chamber of | P.O. Box 992<br>Alexandria, LA 71309 | Rapides Parish | Developing and perfecting the ability to coordinate combat support from a full range of sources appears critical in all levels of combat efficiency. Given the | Comment noted. |

| DMPBAC EA SCOPING COMMENT MATRIX<br>FOR JRTC AND FORT POLK, LOUISIANA | | | | |
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| **Name** | **Address** | **Affiliation** | **Comment** | **Response** |
| Commerce | | | forecasts for the changing nature of future conflicts world wide makes providing this level of training a logical step in ensuring the utmost preparation of those enforcing our national policies and international commitments. | |
| Scott Westerchil | 295 Strutton Rd.<br>Leesville, LA 71446 | Vernon Parish | We are aware that the military is sensitive to environmental issues on all properties and will take measures necessary to repair and maintain same. "GO ARMY IN VERNON PARISH" | Comment noted. |
| Chris Lee | 100 East Texas<br>Leesville, LA 71446 | Business owner | Full support; another way of marketing the need for Fort Polk to remain as a key installation for the military for the long term. | Comment noted. |
| Joseph R. Simine | 1524 High School Drive<br>DeRidder, LA 70634 | Beauregard Parish | Road traffic is a necessity to transverse from training area to training area. The local and state roads must be able to handle the traffic while addressing environmental issues. Noise of firing artillery and tanks may be a concern to those near the training areas. Hunting and fishing are always concerns. The whole issue of wildlife – plants and animals, birds and reptiles needs to be addressed. My concerns relate to access, protection of the environment while protecting citizens of the area from military activity. I still want and expect to have a trained military force. I fully support the efforts of the Chief of staff in modernizing the Army. I support the building and construction of training areas, sites and ranges. Units need to train to fulfill their mission requirements of being ready to fight and win our wars. Having said this, I want the courses to be safe for the civilian community that supports them. | See Sections 4.7, 4.9, 4.11, and 4.12. |
| Charles D. Green | 616 North Pine St.<br>DeRidder, LA 70634 | Beauregard Parish | The vast majority of our local population effects training and closed areas of the Ft. Polk area. We | Comment noted. |

| DMPBAC EA SCOPING COMMENT MATRIX<br>FOR JRTC AND FORT POLK, LOUISIANA | | | | |
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| **Name** | **Address** | **Affiliation** | **Comment** | **Response** |
| | | | welcome any activities that will be beneficial to our national defense efforts. | |
| Clayton Chandler | NSU Army ROTC<br>P.O. Box 929<br>Natchitoches, LA 71458 | Federal Government | No impact on operations. | Comment noted. |
| Whitney Hoiseth | 5 Katherine Loop<br>Leesville, LA 71446 | Vernon Parish | No effect whatsoever. | Comment noted. |
| Jackie Duncan | 114 Harper Ferry<br>Boyce, LA 71409 | Rapides Parish | Peason Ridge is already in a condition of abuse from Army training so maybe a gunnery would not be too much more use of this land. | Comment noted. |
| Lena Wheelock | 338 Alex Hwy<br>Leesville, LA 71446 | Vernon Parish | In my opinion, Ft Polk (and surrounding areas) should be allowed to do anything that is needed to accomplish its mission – Period!!! Should the post close, heaven forbid. Then the public would really, really moan and groan!!! Too bad you have to waste so much time (manpower, supplies, etc.) trying to appease a certain few!! Lets Roll!!! God Bless all of you and God Bless America. | Comment noted. |
| R. J. & Becky Ferctitta | P.O. Box 3401<br>Leesville, LA 71496-0340 | Vernon Parish | We fully support the endeavors and know that all will be done according to laws and regulations. | Comment noted. |
| Leroy Cooley | Mayor of Anacco<br>P.O. Box 280<br>Anacco, LA 71403 | Local/Parish Government | An area of concern, which you have identified, is the noise levels. | See Section 4.9. |
| John K. (Mike) Anderson | 270 Country Club Lane<br>Leesville, LA 71446 | Vernon Parish | The area of intended use has always been an excellent place to train soldiers. The only impact that may possibly cause some concern would be the noise level. This usually, however, is not an issue because of the short duration of fire. Extended duration may cause some adjacent property owner concern. | See Section 4.9. |

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| **Name** | **Address** | **Affiliation** | **Comment** | **Response** |
| Blake Chistelam | 4807 Whitechapel<br>Alexandria, LA 71301 | Rapides Parish | No concerns. I feel that this course is necessary. I believe it will be a positive development for our community and our country. | Comment noted. |
| Pinckney A. Wood, President | The Coalition of Louisiana Animal Advocates (COLAA)<br>C/o Pinckney A. wood, COLAA President<br>6759 General Haig Street<br>New Orleans, LA 70124 | Animal-welfare/animal-protection Org. | Assuming that wild animals such as deer and wild horses may wander onto the Multi-purpose Battle Area where live-fire exercises may be staged, and that existing perimeter fences are insufficient to exclude them, we assert that it will be necessary for the protection of the animals to erect a secure "game-proof" fence along the perimeter of the "hot" zone for the purpose of excluding large mammals. An 8-foot-high steel wire lattice-type fence with 1-foot squares, strung on stiff steel upright supports should suffice. All large animals should be removed from, and kept out of, the enclosure. Styles constructed of concrete-fortified earth could be erected which would allow any deer tat may become trapped within the enclosure to climb to the inside top of the fence level so they could jump to safety on the outside.<br>Birds and other wildlife ought to be kept out of danger to the extent possible. With regard to birds: depending on how often explosions and live-fire will be occurring in the hot zone, and the extent and intensity of the activities, especially if there is insufficient time between such activities to allow for successful nesting and fledging of young, it may be advisable to actively discourage nesting activity within the areas of the hot zone where the birds' rearing of young would be adversely affected.<br>We would like to be kept informed of any matters pertaining to animals so that we may have an opportunity to review and comment upon them. | See Sections 3.7 and 4.7, respectively. |

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| **Name** | **Address** | **Affiliation** | **Comment** | **Response** |
| Russell C. Watson | Fish and Wildlife Service<br>646 Cajundome Blvd.<br>Suite 400<br>Lafayette, LA 70506 | Environmental Org. | The proposed new DMPBAC would provide live fire training opportunities including mounted, dismounted, and aviation gunnery, and would be constructed at Peason Ridge. The Fish and Wildlife Service has reviewed the information provided, and offers the following comments in accordance with the provisions of the National Environmental Policy Act of 1969. (83 Stat. 852, as amended; 42 U>S>C> 4321 et seq.), Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).<br><br>The endangered red-cockaded woodpecker (RCW; Picoides borealis) is known to occur within the proposed project areas. Fort Polk is adjacent to the Vernon Unit, and their combined RCW population has been designated as a primary recovery population within the west Gulf coastal plain in the Service's 2000 Draft Revised Recovery Plan for the Red-cockaded Woodpecker (Draft Plan). The Peason Ridge population has been designated as a significant support population in that Draft Plan. We recommend, therefore, that the forthcoming Environmental Assessment (EA) for the proposed projects address the potential direct, indirect, and cumulative impacts of those projects on the RCW and its habitat, including disturbance. The Service is also concerned about the long-term, landscape level impacts the proposed DMPBAC project may have on the RCW, such as permanent habitat loss, forest fragmentation, and longleaf pine management and | See Sections 3.7 and 4.7, respectively. |

| DMPBAC EA SCOPING COMMENT MATRIX FOR JRTC AND FORT POLK, LOUISIANA | | | | |
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| **Name** | **Address** | **Affiliation** | **Comment** | **Response** |
| | | | restoration efforts (i.e., prescribed burning). We recommend that the EA fully discuss those issues in its analysis of potential project impacts.<br><br>The Louisiana pine snake (Pituophis ruthveni) is also known to occur within the proposed project areas, and is a candidate for Federal listing as a threatened or endangered species under the ESA. A candidate species is one for which the Service has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposal to list, but issuance of a proposed rule is currently precluded by higher priority listing actions. There is currently no consultation requirement under the ESA regarding project impacts on candidate species such as the Louisiana pine snake; however, we appreciate any proactive actions that the JRTC and Fort Polk might incorporate into the proposed projects that would help to conserve (and possibly preclude the need to list) this species.<br><br>The status of Federally listed and proposed species is continually updated as new information becomes available. Therefore, if the potential effects of the proposed project on those species and/or their critical habitat have not been analyzed within one year, we recommend that you contact this office for an updated list of species and/or critical habitat that may be impacted by the proposed project prior to conducting your analysis. If the scope or location of the proposed work is changed, we also recommend that you contact this office as soon as such changes | See Sections 3.7 and 4.7, respectively. |

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| **Name** | **Address** | **Affiliation** | **Comment** | **Response** |
| | | | are made.<br><br>The proposed project may impact wetlands. For a complete jurisdictional wetland delineation of the proposed project, please contact Mr. John Bruza (504/862-1288) at the New Orleans District Corps of Engineers (Corps). If the Corps determines that the proposed project is within their regulatory jurisdiction, official U.S. Fish and Wildlife Service comments will be provided in response to the corresponding Public Notice. | |
| Richard W. Bryan, Jr. | 2405 Evergreen Lane<br>Pineville, LA 71360 | | I am concerned about mercury, lead other pollutants which may be the result of past and present military activity at Peason Ridge. I am further concerned about the possible presence of these pollutants in the Bayou Zourie, Bundicks Creek, Bundicks Lake and other water bodies downstream from Peason Ridge. It is my understanding that fish consumption advisories have been issued for Anacco and Vernon Lakes.<br><br>These water bodies should be tested for mercury and other pollutants, the source traced to Peason Ridge, the cause stopped before any additional activities be authorized.<br><br>I am further concerned about the fragmented U.S. Forest Service holdings within the Peason Ridge Artillery Range and fail to understand how these lands can be effectively managed by KNF or utilized by the public, and wonder if increased military activity will make administration even less feasible. | See Section 3.6.2. |

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| | | | I urge the military and Kisatchie National Forest to work out an arrangement whereby these lands can be exchanged for suitable lands, which have not been contaminated by unexploded ordinance, on Peason Ridge and adjoining the Kisatchie District.<br><br>For example, could the land in the western portion of section 26 and 35 and west of state 117 be returned to the Kisatchie District along with sufficient lands in sections 27 and 34?<br><br>While this may involve only 480 acres it could result in more efficient administration. In addition, with rights of way, increasingly intensive military activity and the Gulf Coast Strategic Highway four laning (state 28W), forested land readily available for public use continues to be nibbled away.<br><br>Alternatives discussed should include the possibility of other more suitable locations for the proposed types of operations.<br><br>Finally, is it anticipated these proposed actions will require additional special use permits from Kisatchie National Forest? | See Section 2.0. |
| Vonell B. Parker | 5368 Longleaf Vista Rd.<br>Provincal, LA 71468 | Natchitoches Parish | If this is constructed on the Army's Peason Ridge Training area, I can't see that that could hurt. This area does not have a lot for game to feed on. | Comment noted. |
| Esther Boykin | Law Firm for the Environment<br>400 Magazine St. Suite 401 | | This action is proposed to take place at the Army's Peason Ridge Training Area, and would include a full-spectrum of live fire training opportunities, such as vehicle mounted, dismounted, and aviation | See Section 4.0 |

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| | New Orleans, LA 70130-2453 | | gunnery. From the limited information available, it may be assumed that direct impacts would occur only on Army lands, however, this is not necessarily the case. If, for example, whether intentionally or inadvertently, military vehicles will enter Forest Service lands, or live fire or noise will penetrate Forest Service Lands – either those adjacent to the Peason Ridge Training Area or those Forest Service holdings within the Peason Ridge Training Area, then those direct impacts, as well as others, must be fully assessed. Indirect and cumulative impacts to Army and Forest Service lands, which will certainly occur, must be fully identified and addressed as well. In addition, impacts to and potential changes to the status of the area as a "Wildlife Management Area" must also be considered. Full compliance with the requirements of NEPA and its implementing regulations is required.<br><br>In addition to compliance with NEPA and its implementing regulations, the potential impacts to any species listed pursuant to the Endangered Species Act ("ESA") and its habitat, must be addressed consistent with the ESA. This may include consultation with the U.S. Fish and Wildlife Service. Impacts to candidate, state listed, and sensitive species (plant and animal) should be addressed, as well. | See Section 4.7. |
| Mark Marley | P.O. Box 2009 Natchitoches, LA 71457-2009 | Natchitoches Parish | As a Lieutenant Colonel (inactive) in the Army Reserves component and previously assigned to the U.S. Transportation Command, I understand the need to pursue these two initiatives which are paramount | Comment noted. |

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| | | | toward validating JRTC's mission capabilities and readiness posture.<br><br>With regards to the utilization and impact of using environmental resources, the general public needs to be reassured that their environment has been and will continue to be protected during future field exercises. As a healthcare provider, Natchitoches Parish Hospital does have resource that might be considered on a contingency basis in support of the training plans.<br><br>Please call me directly at (318)214-4427 if we may be of any assistance. | See Section 1.0, Public Involvement. |
| Pinckney A. Wood | p.a.wood@juno.com | | As you know, the concern that I may want to comment about pertains to the wild horses. However, I can't really make any comments, except perhaps in generalities, unless I have some knowledge regarding the EA proposals. For example: the information provided in the letter merely mentions that the proposed Brigade training is to occur as three separate exercises; and the DMPBAC relates to live-fire training. However, there are no specifics given in the letter. Naturally I have questions that I would need to the answers to before submitting any comments regarding how these proposals may affect the horses, if in fact they will be affecting them at all in any significant way. Can you give me any information as to how the horses may be affected? Do you think that the horses would be a problem for the exercises, or that the horses would be endangered by them? | See Section 3.7 and 4.7, respectively. |

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| | | | The DMPBAC proposal says that it would provided a full-spectrum of live fire training opportunities, but since the word "digital" appears in the title, I wonder if there is to be actual live fire, or is the exercise to be based upon computer-assisted simulations where there is no actual live fire.<br><br>Would it be possible to e-mail me some information about the proposals that would help me determine how the wild horses may be affected? | See Section 1.0 and 2.0 |

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| Michael A. Cain | 389 Highway 117<br>Leesville, La 71446 | Vernon Parish Resident | As the proposed location of the Digital Multi-Purpose Battle Area Complex at the Peason Ridge area lies in close proximity to my residence as well as several of my neighbors, I have several areas of concern. Among my concerns are: 1. The safety of area residents in the event of an A.D. (Accidental Discharge) of a weapon. 2. Noise. 3. Congestion of area roadways by military traffic. And. 4. Dust, and its control during times of dry weather.<br><br>1.) The safety of area residents in the event of an A.D. This is not something that might happen. This is something that "will" happen. Live fire exercises by their very nature are dangerous. Safety demands buffer zones and location of live fire areas away from populated areas. This is not the case in this proposal. If this facility is built and units allowed to fire weapons at this site they will be doing it well within range of civilian populations. From my view of the proposed facility on area maps as presented by Fort Polk officials at the public meeting on 11-18-02, live fire will be conducted less than 1000 meters from my residence. No where on Fort Polk is there a live fire range directly across the street from a military housing complex. Fort Polk Safety Officials would never allow that to happen. Why don't Fort Polk Officials view my safety and that of my family as important as their own? I know they will say that live fire will be directed away from populated areas, however, A.D.'s will happen and when they do they could have catastrophic consequences because of the lack of safety buffer zones. If they say it won't happen then I guess there's no such thing as "friendly fire" in combat either. It will happen! The solution is the rethinking of the placement of this facility so close to civilian populated areas.<br><br>This facility can be and should be realigned. I don't think that Peason Ridge is large enough to accommodate this facility if the safety of area residents is taken into consideration. Residents currently live within close proximity on the East, West, and North sides of Peason Ridge. As currently configured this complex leaves no safety zone for area residents. The types of weapons systems to be used have ranges greater than the distances to civilian housing. I can visualize a soldier preparing to fire his M-60, or 50 caliber machine gun on the turrent or top of his Humvee or Bradley during rainey weather slipping and firing off a burst of rounds 20 to 30 degrees north of his target and with 20 to 60 degrees of elevation. These rounds would come down "OFF" | 2). The US Army COE Structural Mechanics Division conducted an analysis of the seismic environment resulting from the firing of a 105 mm in 1985. Result indicated the velocity at 3,900 meters from the source was less than 0.015 inches per second. Impact measurements on well caused by the 105 mm firing indicated that properly constructed wells in the area should not experience seismic damage. (Section 4.9.2)<br>3) Most traffic to Peason Ridge is via the yellow brick road. The development of the DMPBAC will not cause additional road traffic on LA 28, 117 or 118 than presently exists (Section 4.12.2).<br>4) Where practical, the use of water spray trucks will be deployed to moisten the sooil and lessen the fugitive dust.(Section 4.10) |

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| | | | Peason Ridge in civilian populated areas. I can also visualize this same soldier having an accidental discharge off the reservation towards housing along La 117.<br><br>Can't happen? Lets talk about distances involved. From along La 117 near the Natchitoches/Sabine Parish line to Billy Dowden Cemetery on La 118 my relief map which is lined off in square miles shows it to be approximately three to three and one half miles from the beginning of this proposed range. An error of only 10 degrees north of an intended west target brings this area under fire. A forty-five degree error brings fire to the residence of Charles Boles who lives along La 118 about two miles from La 117. Can't shoot that far? Well I remember buying .22 caliber ammunition with a warning on the box "Range one Mile". We're not talking about .22 caliber squirrel guns. We're talking Military weapons. M-16's, M-60 machine guns, 50 caliber machine guns, and only the army knows what else. All of these weapons have considerably greater range than this.<br><br>At the public meeting on 11-18-02 a military official said that the reason this facility couldn't be placed on the far east side of fort Polk was that there wasn't enough safety buffer zones for soldiers training. If placed along La 463 at the site of the old 5th Inf Div tank ranges, the nearest training along the Dugout Road area would be 10 miles away, and there are civilians live only 10 to 45 degrees away from firing directions and at times less than 2 miles away, and there are civilian areas directly across La 117 less than 1000 meters away. And this is enough room? It should be obvious that Fort Polk Military Officials have the right to place me, my family, and my neighbors at risk of becoming the target of their wayward fire. Indeed, they have the responsibility of taking great care to see that their use of their weapons on their land stays on their land. By proposing this facility where they have, they have failed greatly in their responsibility.<br><br>Peason Ridge has never been used as a live fire area for weapons of this type. Why? Because its not large enough to accommodate the ranges and the safety zones that they require. I know that it has been used fro aerial bombing and recently for artillery fire. It has an impact area that has been used for these types of fire for years. But it has never been tasked with this type of live fire and maneuver that Fort Polk officials now want. I might add that recently even these types of weapons have been misdirected off of | |

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| | | | Peason Ridge. One, an artillery round, landed north of La 118 near a Church. The other, a rocket fired from a helicopter, landed on timber company land west of the Peason boundary. In both instances forest fires were started by the off target rounds.<br><br>2.) Noise. I include artillery shell concussions in this area. When artillery units and other larger weapon systems are fired they are very noisy. But its not just the noise. The large weapons have concussions which goes with the noise. These concussions shake the ground and damage homes and water wells. Are Military Authorities going to take responsibility for damage caused by the cumulative effect of these weapons. Repairs to broken foundations of homes, cracks that develop in brick walls, silted in wells, and other damage to their property attributable to these weapons? How long after darkness will firing be allowed?<br><br>3.) Congestion of area roadways by military traffic. At the 11-18-02 meeting a Lt. Colonel form Fort Polk assured area residents that JRTC military traffic was primarily using the "Yellow Brick Road" to egress and ingress Peason Ridge. The "Yellow Brick Road" is an easement granted to the military for travel between Peason Ridge and Fort Polk. Most Fort Polk units utilize this route in traveling between the two areas. What the Lt Colonel didn't say was that Rotational Units do not use this road. They use La 28, La 465, La 117, and La 118 in their movements to Peason Ridge. This is because they don't come from Fort Polk. They arrive in Louisiana at England Air Park near Alexandria and use its facilities as a "staging" area to travel to their training sites. The congestion these units cause is an inconvenience to area residents. Military Authorities mentioned the upgrading of La 117 at the meeting. Please discuss this more in the report.<br><br>4.) Dust, and its control during times of dry weather. During the summer months and periods of dry weather dust will be a major irritant to area residents if this training area is placed where proposed. During my service at Fort Polk when the 5th Inf Division was assigned there we solved dust problems by placing tar on range roads which passed near civilian areas. Can something such as this be done here? Or can water trucks make passes over the area to lessen dust? Again the placement of the training area away from civilian areas would also accomplish this goal. | |

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| | | | My Proposal. Place this training area on the eastern border of Fort Polk along La 463. This location already has the old 5th Inf Division Tank ranges. These were designed to shoot and maneuver and could be easily converted to funtion as the desired Digital Multi-Purpose Battle Area Complex. This location has the advantage of being away from civilian areas and possesses an impact area well away from any other inhabited areas. This area makes sense. It is a large area, as large as Peason Ridge and has no other training areas near. If selected other training conducted around the Dug Out Road area could easily be shifted to Peason Ridge, which would more than make enough room for this training area. | |
| Rickey Robertson | 22 Peason Road<br>Florien, La 71429 | Sabine Parish Resident, Peason Resident | 1) Too much excessive gun noises even drown out church services at Pine Grove Baptist church and Peason Pentecostal Church. This is disruption of one of our most basic freedom's—Freedom of Religion.<br><br>2) Damage to all our drinking water wells. We do not have a public water supply in Peason. We depend on water wells. Due to excessive shelling and bombardments on Peason Ridge many many of our wells are be damaged and sand is filling them up. We must have water but due to extremely heavy shelling will damage wells even further than Peason. We have to pay all the repair costs on our wells caused by your bombardments.<br><br>3) Damage to La Hwy's 117 and 118 is extensive due to continuous use by convoy's of heavy military vehicles. It was shocking at the meeting at Kisatchie Work Center (11/02) that Gen Kamiya and command staff that all military vehicles used the tank trail. If the command staff is that far out of grip with the situation, it is scary! Is this the cause of 2 major accidents in recent months causing death to soldiers?<br><br>4) Property values will plummet in Kisatchie & Peason areas. Due to excessive noise, dust, etc. If we get where we have to move to get relief, who in the world wants to buy a residence continuous jarred, shaken, and rattled by gunfire and bombardment.<br>*The Commanding General lost his composure due to direct questions at the meeting and he said he could just go ahead and do what HE wanted to since it was DoD land and he didn't have to have the meeting. Doesn't the uniform he wears mean he is dedicated to helping ALL Americans, even the ones who don't think as he does. Where's the Code of Conduct? | 2). The US Army COE Structural Mechanics Division conducted an analysis of the seismic environment resulting from the firing of a 105 mm in 1985. Result indicated the velocity at 3,900 meters from the source was less than 0.015 inches per second. Impact measurements on well caused by the 105 mm firing indicated that properly constructed wells in the area should not experience seismic damage. (Section 4.9.2)<br>3) Most traffic to Peason Ridge is via the yellow brick road. The development of the DMPBAC will not cause additional road traffic on LA 28, 117 or 118 than presently exists (Section 4.12.2).<br>6) Section 4.8. |

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| | | | 5) Destruction of wildlife habitat will be greatly impacted. Wildlife and plant species will be endangered. Moving Red Cockaded Woodpeckers from their Natural habitat is not an answer.<br><br>6) Historical and Native American artifact areas are being destroyed each rotation, with no interest by JRTC. There are many Native American artifact areas, even when identified, and destroyed. In talking with previous archaeologists who have made digs on Peason Ridge, they explained to me in some areas they have recovered enough Native American bones and body parts to put together several skeletons. JRTC expansion will destroy and desicrate these areas.<br><br>7) Disruption of sleep and rest by continuous bombardment will be caused. The people who live in these rural areas work long and hard each day, and with gunfire and artillery impacting day and night, who can rest. Loss of rest causes health problems. We can't go to Bayne-Jones Hospital for free medical services.<br><br>One thing about the 5th Inf Div. Gen. Wong, Col. Tucker, Col. Melton, and Col. Marchand (JAG) would continuously come and visit with people in the Peason community and would gather input themselves of any possible problems. They promoted wonderful public relations by doing this. JRTC has been at Fort Polk 10 years and we have never seen anyone from the command staff in 10 years. Only continuous rotations of training with problems who have not been addressed. Do you wonder why people at the meeting have no Trust in the JRTC. A don't care attitude and strong arm tactics Do Not Make favorable public relations-------- | |
| Patricia Robertson | 22 Peason Road<br>Florien, La 71429 | Sabine Parish Resident, Peason Community Resident | 1) Noise at present is excessive. With more heavy bombing and artillery, it will become almost unbearable. My little pet Chichuahua gets so scared and upset by the constant noise ad concussions to the ground that she stays sick and hidden under the bed and won't come out. That is how close the shelling is to our home at present.<br><br>2) The constant bombing and ground concussions are causing our water-wells in the Peason community and surrounding areas to go bad. We had to have over 400.00 in | 2). The US Army COE Structural Mechanics Division conducted an analysis of the seismic environment resulting from the firing of a 105 mm in 1985. Result indicated the velocity at 3,900 meters from |

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| | | | repairs to our well this past summer due to it sanding in from the concussion of the shelling and bombing.<br><br>3) I work in Many La and have to have my rest at night. It is impossible to sleep when the guns are set up at the firing point about a mile and a quarter from my home. They shoot all day and night, at all hours. I cannot rest at all.<br><br>4) Noise gets so loud that it is starting to disrupt church services at Pine Grove Baptist Church. It does not matter what day it is, even on Sunday, a day of worship, that there are continuous bombardments and live firing noises. The army may own Peason Range, but your noise and dust covers us over. We cannot enjoy the freedom of worship at our church. There also has been numerous occasions that military vehicles have came and parked in our churchyard and directed aircraft and helicopters into the range. You have 32,000 acres of land, yet your military personnel continue to go where they please.<br><br>5) In the last 2 months or so you had major training accidents during the rotations, 2 helicopter crewmen and 2 infantry soldiers have died. In the Peason Community misdirected fire has burned 29 acres of land in one spot, with other damages, and 19 acres of land burned in another location. The army had denied this damage due to misdirected fire, but the State Forestry Commission has evidence of the cause, plus there was 2 eye-witnesses to these events. What would the news media say of all these happenings if the truth was brought forth?<br><br>6) Hwy 118 has been destroyed by the heavy military trucks and even at times there have been armored vehicles on it. It is dangerous to travel this road with extremely long convoys on them, or pulled off the road with vehicles on the road and on the shoulders and in the ditches. I am fearful to meet these long strings of trucks the way they drive on the narrow road as it is.<br><br>7)Why don't the leaders of the JRTC come and visit the Peason, Kurthwood, and Kesatchie residents. You have never done so. Why don't you build our trust in your organization? You haven't in 10 years. | the source was less than 0.015 inches per second. Impact measurements on well caused by the 105 mm firing indicated that properly constructed wells in the area should not experience seismic damage. (Section 4.9.2)<br>6) Most traffic to Peason Ridge is via the yellow brick road. The development of the DMPBAC will not cause additional road traffic on LA 28, 117 or 118 than presently exists. |

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| | | | 8) Why don't you change the maneuver rotations from Fort Polk to Peason and let all the live firing be done on Fort Polk where there are already ranges that have been used before, especially on La Hwy 463 near Pitkin. There are no residents near there who would be displaced. Why cannot this be implemented? You will have the same scenario as before, just different locations.<br><br>We are concerned with this range being implemented right on top of us. Please consider leaving this type of training in another location. Trying to turn Peason into Afghanistan will not work….. | |
| Mrs. William E. Dowden | 142 Old Kisatchie Cem. Road Provincal, La 71468 | Natchitoches Parish Resident | 1) Disturbances of water levels of shallow wells in the near proximity of Peason Ridge<br><br>2) Sediments in Kisatchie Creek (In the last 30 years the creek no longer has the water flow or the deep holes)-<br><br>3) We don't want to the the acquiring of private lands to enlarge the military training area as was done during WW II- people were literally "pushed off" their land.<br><br>4) Any government monies that may have been paid to rebuild roads were "sidetracked" into another fund. I'd like to see the money put on roads here, not elsewhere.<br><br>5) Need improvement on Hwy 117!<br><br>We desperately need the help of the Army to get a transmitting tower in this area-(cell phones are useless unless you're on a high hill) | 1) The US Army COE Structural Mechanics Division conducted an analysis of the seismic environment resulting from the firing of a 105 mm in 1985. Result indicated the velocity at 3,900 meters from the source was less than 0.015 inches per second. Impact measurements on well caused by the 105 mm firing indicated that properly constructed wells in the area should not experience seismic damage. (Section 4.9.2)<br><br>2) Sedimentation and Kisatchie Creek are discussed in section 3.6 and 4.6 |
| Diane Boles | 273 Jerry Boles Road Provencal, La 71468 | Natchitoches Parish Resident, on | I want to know is this the way you plan on easing into this [word unclear] of we are against the military (making us out to be the bad guys.) When we support our boys and girls just as much as anyone??? All we want is for you to leave it just the way it is now. | |

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| | | the Vernon and Sabine Line also. | I was raised on my 2 acres and my parents and grandparents, great grandparents and great, great grandparents also. And now their bodies lye in their graves and when I die I want to lay beside them!!! So I guess my main question is, when are you planning on taking my land and destroying my childs future grieving on moving my parents, and their parents and my own resting place??? | |
| Paul E. Chaney | 1300 Cooper Road De Quincy, La 70633 | Beauregard Resident, Land Owner and Native of Kisatchie, La. | I believe in our commitment to our National Defense however detrimental to locals. But, the army mush show respect to local landowners. Instead of asking us to call you with problems, why can't a qualified officer (not a civilian) go around to the locals. Let him mingle while the noise and other problems are happening. It might help out. I have a son-in-law in the service. Train him as well as you can. | |
| Brett J. Plaisance | 8979 Hwy 117 Provencal, La 71468 | Natchitoches Parish Resident | Will military convoys travel on Hwy 117 and Hwy 118?<br><br>If so, can proper military intervals be adhered to as well as parking military vehicles on private property to direct traffic. | Most traffic to Peason Ridge is via the yellow brick road. The development of the DMPBAC will not cause additional road traffic on LA 28, 117 or 118 than presently exists (Section 4.1.2). |
| Unknown | Unknown | Unknown | Area of East Fort Polk Road along La 463 the old 5th division tank maneuver ranges would be better suited to this type of endeavor. Larger areas exist with much favor civilians makes more sense. Range 42 which is not in use at this time. | |
| John S. Edwards Sr. | 208 Mark[?] Hutton Road Provencal, La 71468 | Natchitoches Parish Resident | What kind of impact will this have on the people on 118 East of Kisatchie near Devil Swamp Area? | |
| Keith Scoggins | Unknown | Unknown | I was at the meeting in Kisatchie on the night of November 18, 2002. I feel that the meeting did not inform the general public of what is being planned on Peason Ridge as good as it should have. After talking with the people present, after the meeting, we felt as if the DMPBAC facility is ging to be built whether we like it or not. The general made it very clear to us, that this was going to be on government land, and that the Army could pretty well do what they wanted, whether we liked it or not. I agree strongly, that a facility of this nature should be built to train the soldiers in the very best way possible to defend our nation in war. I take my hat off to all of those that serve in the military, and appreciate it greatly. But, I feel that this particular type of facility should be built in an | 2) Sedimentation and Kisatchie Creek are discussed in section 3.6, 3.7, 4.6. and 4.7. |

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| | | | area that is more in line with the type of war that our people in the armed services will be fighting. It needs to be located in an area that isn't as populated with people as heavy as the area around Peason Ridge. I am sure that the army has looked at all of the families that live close to the projected area of concern. Some are not effected as much as others. My family happens to be one of those that is effected probably more than any, that lives around the boundary of Peason Ridge. My families land borders the range on the Northeast corner, and was Homesteaded early in the 1800's. This land was "HOME" long before Peason Ridge ever existed. The environment has been greatly disturbed since the Army has been using this land, and it continues today. Adding more fuel to the fire, with the installation of this new type of training even makes it worse. The wildlife on this range have been effected and still are being effected. I guess you are aware of the presence of the "Redcockaded Woodpecker" which makes its home on Peason Ridge. I get great joy watching these birds around the area, and enjoying showing them to my children. Sir, these birds are on the federal endangered species list, and are protected according to the laws of the United States of America. This means that they are to be protected at all cost. Even if human can't live here, these birds will! They should not be disturbed, harassed or bothered by anyone, including the army! There also are Florida Panthers (mountain lions, cougars, etc.) on this land. Many do not know this, but believe me, they are there because I have personally seen them. They need protected too. What about all of the deer and turkeys on Peason Ridge? They need to be managed in a way that will keep them thriving. At the present time, they are not being managed properly either. One of the ways of managing these, is by taking some off of the land from time to time so they don't over populate. You do this by having a hunting season. I agree that there is a hunting season, but Peason Ridge is not open enough days for hunting, to do this properly. Why can't the army shut down, some of the days during hunting season to allow for this to happen. I was told that there would only be 4 days allowed for deer hunting this year. The noise level at my house is unbearable at times. My property is less than ¼ mile from where the heavy artillery is being fired. The vibrations have damaged my wells, my windows have been cracked and the foundation of my house has been effected by the constant noise and vibrations. You mentioned in some of your hand outs, how to help some of these problems. I don't have the financial means to upgrade my house in a manner such as this. It shouldn't be my expense anyway, because the damage was caused by the | |

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| **Name** | **Address** | **Affiliation** | **Comment** | **Response** |
| | | | constant noise and vibrations caused by the army. I would like for the army to make restitution for the damages that they have caused, and make the necessary improvements to my house to guard against any further damage if this facility is allowed to be built. The streams have been damaged because of the constant sedimentation that flows off of the range and down the creeks. Sandy Creek which runs thru the middle of my property is a perfect example. The sedimentation and sand that has flowed down this creek has built up and not allowed me to have access to part of my property via truck, tractor and four wheeler as I have done so in the past. With little effort, the army could keep up the crossing on this creek, which is on my property, maintained in a way that I could have access and full use of my land. A small bridge could be built that would eliminate any additional or further maintenance if the army so choose, and would greatly be appreciated.<br><br>I am not against the army being trained in the best way possible, but these are a few concerns that I have that I feel need to be addressed. I will work any way possible with the army to make this happen like the general stated that needed to be done. But, I feel like the army needs to work with us too. If the army truly wants to do so, it can happen. All of the people n my community are educated, open minded, and respectable people. They will do whatever is needed to make this work, if the army will work with us. I hope that you will address each one of these issues, and I thank you. | |
| Larry and Amy Vaughn | 830 Hwy 118W<br>Provencal, La 71268 | Natchitoches Parish Resident | Our house is 2 ½ miles west of the Kesatchie County Store which is approximately 2 ½ miles from the impact area. We poured our slab in May, 1990 and moved in June, 1991. We had extra reinforcement in our slab due to living in this area. At the present time, we have numerous cracks in our slab, cracks in the corners of our walls in several places, and in our ceiling in places. We have to re-align the doors in our house about once a year due to settling because of the cracks in the slab.<br><br>The past year, we have experienced a lot more bombing with greater impact. The noise jars us awake some nights. It rattles the windows o occasion. We feel that due to the years of bombing that it has damaged our slab and thus, cracked our walls and ceiling.<br><br>We have recently noticed that our well water has a lot of sediment in it. We have a shallow well. | The US Army COE Structural Mechanics Division conducted an analysis of the seismic environment resulting from the firing of a 105 mm in 1985. Result indicated the velocity at 3,900 meters from the source was less than 0.015 inches per second. Impact measurements on well caused by the 105 mm firing indicated that properly constructed wells in the area should not experience seismic |

| DMPBAC EA SCOPING COMMENT MATRIX<br>FOR JRTC AND FORT POLK, LOUISIANA | | | | |
|---|---|---|---|---|
| **Kisatchie, Louisiana Public Meeting, November 18, 2002** | | | | |
| **Name** | **Address** | **Affiliation** | **Comment** | **Response** |
| Paul Chance | Unknown | Unknown | Our property value has decreased tremendously. Should we ever decide to sell, we would get much less than what our property would be valued at. We would like for someone to come and assess the situation and discuss possible solutions. The on-site visit needs to be scheduled when they are doing some bombing so that they can see how much noise and impact it has on our home.<br><br>Thank you all for setting up the meeting last night. We are looking forward to hearing from you soon.<br>I would like to offer some specificity concerning some possible mitigating measures the Army might consider, especially for those folks living in such close proximity to the impact areas in Peason.<br><br>Have the Environmental Division conduct a series of water quality studies, vibration studies and ambient noise studies to establish baseline measurements before, during and after military exercises. These studies could determine the amount of suspended solids in the wells serving the civilian dwellings immediately adjacent to or closest to the impact areas…establish "bands" of impact, if you will. They could use geologic instrumentation to determine the magnitude of seismic effects caused by bombing and shelling within those "bands". Ambient noise levels could provide data that could be used to determine exactly where and when the most disruptive activities need to be adjusted to meet the environmental needs of the citizens most adversely affected.<br><br>I know that Northwestern, ULL, LSU and a number of other universities have the capability to conduct such studies. Perhaps they could be a valuable resource in the effort to consider the needs of the citizenry.<br><br>Is it possible that the Army could use the information form such studies to help develop programs with other agencies to provide low cost loans for noise reduction measures for homes located within certain of those "bands" that may be deemed critical for mitigation measures??<br><br>Several years ago many of these issues were dealt with at Camp LeJeune, NC when it | damage. (Section 4.9.2) |

| DMPBAC EA SCOPING COMMENT MATRIX<br>FOR JRTC AND FORT POLK, LOUISIANA | | | | |
|---|---|---|---|---|
| **Kisatchie, Louisiana Public Meeting, November 18, 2002** | | | | |
| **Name** | **Address** | **Affiliation** | **Comment** | **Response** |
| | | | was found that homes were receiving damage from similar military training. In other words we are not reinventing the wheel here and as a good "corporate citizen of these communities, the U.S. Army has a duty to other community members to go above and beyond in its citizenship efforts.<br><br>Finally, I know that the General is very involved with the SEP program at Fort Polk and that he has on a number of occasions written in the Guardian about the importance of quality of life issues for the soldiers, their families and all involved with the Army. How vitally important it is to today's Army, for the future of the Army, that its soldiers and their families feel secure and happy in their lives. Is that attitude missing as concerns the "military family" that is indirectly involved simply by it proximity to military activities from which there is no escape. One gentleman spoke about the value of his property were he and his family to decide they had to move…he would have no property value. How secure and happy can he and his family possibly feel about the future?? | |
| Paul Chance | Unknown | Unknown | I am a resident of Kisatchie. I was in attendance at the public meeting held at the Kesatchie Work Center this evening. I am struck by several facts as put forth in the meeting…whether by innuendo or statement of fact, they are facts all the same.<br><br>1) The DMPBAC is a done deal.<br>2) The public input was an exercise in public relations…not system design.<br>3) Woodpeckers and Muslims (foreign and domestic) have more rights in this country than do the denizens of these rural burgs.<br>4) Christian church services SHALL NOT stand in the way of mission…at least not at Kisatchie or Peason.<br>5) Neither shall good drinking water, restful nights sleep for school children and gainfully employed adults.<br><br>A. I find it astonishing that with 242 days and nights of training that there is no way to not fire heavy weapons and bombs from say 11:30 pm until 5:00 am weeknights/school nights and from 10:00 am—10:00 on Sundays. I would bet a weeks pay that were the General having to endure that in his and his family's daily life some way to accommodate him would be found. | The US Army COE Structural Mechanics Division conducted an analysis of the seismic environment resulting from the firing of a 105 mm in 1985. Result indicated the velocity at 3,900 meters from the source was less than 0.015 inches per second. Impact measurements on well caused by the 105 mm firing indicated that properly constructed wells in the area should not experience seismic damage. (Section 4.9.2) |

| DMPBAC EA SCOPING COMMENT MATRIX<br>FOR JRTC AND FORT POLK, LOUISIANA | | | | |
|---|---|---|---|---|
| **Kisatchie, Louisiana Public Meeting, November 18, 2002** | | | | |
| **Name** | **Address** | **Affiliation** | **Comment** | **Response** |
| | | | B. I also believe that if one's well water is being affected by the vibrations and impacts of heavy weapon's fire and the screams of low flying attack aircraft, that there is also a way for the military to help those affected people with mitigating technology to relieve the damage done to their drinking water and their homes.<br><br>C. One of the gentlemen of your group spoke most succinctly to the real position of the citizens surrounding the Peason Reservation when he said "The law MAKES us protect those woodpeckers." There is simply no such concern for the citizens…We are lower on the ladder of concern than a woodpecker. It is unfortunate for us that we live where and when we do as far as the impact of the heightened level of activity on the DMPBAC on our lives is concerned. WE lose.<br><br>Finally, I would also bet a week's pay that there is a charm school that could make room for a General. Granted that Peason Ridge Military Reservation is U.S. Government property…but we are the Government. We are also fairly intelligent people and we know when we are being talked down too. He can save his condescension for his troops and his underlings. Such public antagonistic monologues can tarnish even the brightest star.<br><br>The condition of HWYs 117 and 118 are atrocious at best. Additional military traffic associated with increased usage of Peson is inevitable. It is an insult to the intelligence of people who see the level of military vehicular traffic on these roads to tell them there will be no additional traffic…that all military traffic will be confined to the tank trail. That simply is not the fact. We see HUMVs, the heavy trucks, the busses everyday…destined for some point on Peason. They roll through Kisatchie…MPs posted at the cross roads to direct traffic. They come into the store at Kisatchie. They use the roads…FACT. During the 1980s the Air Force was instrumental in having a significant amount of work done to Hwys 465 and 28 to facilitate movement of their vehicles to and from England Air Force Base and Peason Ridge. As you are aware there is a study currently underway to look at the future of Hwy 117. Why not have the Army be a positive force in furthering and advancing the timeline for those improvements at least in the areas concerning and related to the DMPBAC project. The DMPBAC is apparently a long-term venture. The General referred to it as an investment in the future. | See Section 4.12.2. |

| DMPBAC EA SCOPING COMMENT MATRIX<br>FOR JRTC AND FORT POLK, LOUISIANA | | | | |
|---|---|---|---|---|
| **Kisatchie, Louisiana Public Meeting, November 18, 2002** | | | | |
| **Name** | **Address** | **Affiliation** | **Comment** | **Response** |
| | | | Why then isn't the Army's influence directed towards improving this vital traffic corridor?? Hwy 117 is one of those areas of concern where the Army can do something. Influence and work with the State of Louisiana and help get Congress to appropriate funds to assist in the upgrade of this vital corridor associated with the long-term mission of JRCT-Fort Polk.<br><br>Citizens of the area spoke specifically about the impact on their quality of life: a. Damage to sources of drinking water, b. Damage to living structures, c. Impact on their families and quality time with their families, d. Impact on the religious life and community<br><br>The figure of $36,000,000 was given as the cost of the DMPBAC project. I must believe that somewhere in the other funds associated with the development of this project there must be funds to apply to the study of the impact on drinking water/shallow wells ad mitigating factors to alleviate future damage, to qualify and quantify any structural damages that may be related to the current level of activity at the Range, to find alternative scheduling procedures/ techniques that minimize the impact on religious life and family life, to provide alternative scheduling for military training activities that are the most disruptive.<br><br>I have only recently moved back to this area. I left here many many years ago. The military has been a component of life here since long before my time and during the life of virtually every person present at that meeting tonight. These folks are proud to have the military here. Many of us work in jobs at Fort Polk or in industries related to Fort Polk support. No one really wants to see the military leave. That said, no one wants to be run over by the military either. It is my opinion that proactive efforts by the Army that go beyond simple town hall meetings would go a long way towards assuaging the feelings of those who feel they were trampled on there tonight.<br><br>There are things that can be done to make the DMPBAC work better for all concerned. That can improve the safety and quality of life for those who have to live with the DMPBAC. After all this is happening in their backyards. When they come home from school or work they come home to an impact area. An impact area that is about to become more noisy, dusty and disruptive than it has ever been before. The Army needs | |

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|---|---|---|---|---|
| **Kisatchie, Louisiana Public Meeting, November 18, 2002** | | | | |
| **Name** | **Address** | **Affiliation** | **Comment** | **Response** |
| | | | to find was to lessen that noise and disruption. I think a little more concern to the schedules and quality of life factors that make up our environment is every bit as important as the environment made up of Kisatchie Creek and the Cockaded Woodpecker. | |

# APPENDIX B

# REPTILES, AMPHIBIANS, AND SMALL MAMMALS LOCATED WITHIN THE USFS INHOLDINGS ON PEASON RIDGE

**SMALL MAMMAL SURVEY WITHIN U.S. FOREST SERVICE INHOLDINGS ON PEASON RIDGE PROPOSED DMPBAC AREA**

Preliminary results from small mammal trapping surveys 26 Feb 2002 to 8 May 2002. Primary investigator, Beau Gregory, JRTC and Fort Polk, Louisiana.

## Materials and Methods

The 3 sites were named 204, 99, and 38, according to their acreage. A total of 20 transects were divided among the 3 sites taking into account their individual acreage. Each transect was 135m long with 2 traps placed every 15m for a total of 20 traps /transect. Transects were numbered 1-20. Live traps were baited with wild birdseed with a mixture of oats and peanut butter placed on the door to coax the animal inside. Transect locations were chosen in a stratified random sample. Transects were sampled for two consecutive nights once per month (unless restricted due to military training), until additional trapping effort produced no new species.

## Results

Survey data are below. The survey is not complete at this time because of increased military training.

**AREA 204 (Forest Service inholding of 204 acres, shaped like a sideways T)**
Centralized grid coordinate for study area: 827708,
**# trapnights** (# of traps x # of nights) = 1680
**species found**

| | |
|---|---|
| hispid cotton rat | *Sigmodon hispidus* |
| golden mouse | *Ochrotomys nuttalli* |
| eastern woodrat | *Neotoma floridana* |
| white-footed mouse | *Peromyscus leucopus* |
| cotton mouse | *Peromyscus gossypinus* |
| short-tailed shrew | *Blarina carolinensis* |
| fulvous harvest mouse | *Reithrodontomys fulvescens* |
| least shrew | *Cryptotis parva* |

**AREA 99 (Forest Service inholding of 99 acres, furthest to the west)**
Centralized grid coordinate for study area: 785720
**# trapnights** = 720
**species found**

| | |
|---|---|
| eastern woodrat | *Neotoma floridana* |
| golden mouse | *Ochrotomys nuttalli* |
| cotton mouse | *Peromyscus gossypinus* |
| white-footed mouse | *Peromyscus leucopus* |

**AREA 38 (Forest Service inholding of 38 acres, located along the northern boundary of Peason Ridge)**
Centralized grid coordinate for study area: 822730
**# trapnights** = 240
**species found**

| | |
|---|---|
| cotton mouse | *Peromyscus gossypinus* |
| white-footed mouse | *Peromyscus leucopus* |

**Project Totals**

**Trapnights** = 2640
**# species** = 8
# **captures** = 32
**Trap success** = 1%

**CONFIRMED REPTILES AND AMPHIBIANS WITHIN U.S. FOREST INHOLDINGS ON PROPOSED PEASON RIDGE DMPBAC AREA**

Primary investigator, Beau Gregory, JRTC and Fort Polk, Louisiana. Below is a list of reptiles and amphibians that have been confirmed through sight or sound on the Forest Service lands mentioned in the small mammal information sent previously. This is by no means an all-inclusive list. Most of these animals were observed while trapping the small mammals and during a salamander survey.

## Materials and Methods

This salamander survey consisted of clearing 3m by 3m quadrats of all leaf litter with a rake while visually searching for salamanders. The quadrats were located 15m from the first trap station (opposite the transect azimuth) on each small mammal trapping transect for a total of 20 quadrats (180 square meters raked).

## Results

No salamanders were found.

**AREA 204**
Centralized grid coordinate for study area: 827708

| | |
|---|---|
| *Rana clamitans* | bronze frog |
| *Rana sphenocephala* | southern leopard frog |
| *Pseudacris triseriata* | upland chorus frog |
| *Hyla chrysoscelis-versicolor* complex | gray treefrog |
| *Sceloporus undulatus* | northern fence lizard |
| *Scincella lateralis* | ground skink |
| *Anolis carolinensis* | green anole |
| *Cnemidophorus sexlineatus* | six-lined racerunner |
| *Terrapene carolina* | three-toed box turtle |

**AREA 99**
Centralized grid coordinate for study area: 785720

| | |
|---|---|
| *Acris crepitans* | northern cricket frog |
| *Hyla chrysoscelis-versicolor* complex | gray treefrog |
| *Rana sphenocephala* | southern leopard frog |
| *Scincella lateralis* | ground skink |
| *Anolis carolinensis* | green anole |
| *Sceloporus undulatus* | northern fence lizard |

**AREA 38**
Centralized grid coordinate for study area: 822730

| | |
|---|---|
| *Rana sphenocephala* | southern leopard frog |
| *Acris crepitans* | northern cricket frog |
| *Hyla chrysoscelis-versicolor* complex | gray treefrog |
| *Sceloporus undulatus* | northern fence lizard |
| *Scincella lateralis* | ground skink |
| *Agkistrodon contortrix* | southern copperhead |
| *Agkistrodon piscivorus* | western cottonmouth |

**Additional species confirmed within DMPBAC footprint on Army owned land**

| | |
|---|---|
| *Eurycea quadridigitata* | dwarf salamander |
| *Eumeces anthracinus* | Coal skink |

# APPENDIX C

# FISH AND AQUATIC INVERTEBRATE SPECIES IDENTIFIED IN RECENT SURVEYS ON PEASON RIDGE

## Appendix C. Fish and Aquatic Invertebrates Identified in Recent Surveys on Peason Ridge

### Fish Identified in Recent Surveys on Peason Ridge

| | | Percent Species Abundance by Stream Drainage | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Kisatchie | | | | Calcasieu | Sabine | | |
| **Common Name** | **Scientific Name** | **Lyles** | **Little Sandy** | **Odom** | **Tiger** | **Comrade** | **Anacoco** | **Dowden** | **Martin** |
| Southern Brook Lamprey | *Icthyomyzon gagei* | | 2.4 | 2.6 | 2.9 | | | | |
| Black-Tail Shiner | *Cyprinella venusta* | | | 21.1 | 3.1 | | | 1.3 | 2.0 |
| Striped Shiner | *Luxilus chrysocephalus* | 7.9 | 10.2 | 19.5 | 32.8 | | | | |
| Redfin Shiner | *Lythrurus umbratilis* | 9.5 | 7.1 | 8.7 | 18.7 | 23.2 | 18.6 | 40.8 | 55.1 |
| Ribbon Shiner | *Lythrurus fumeus* | 5.5 | 1.3 | 0.2 | 6.0 | 15.7 | 2.1 | 38.3 | 23.5 |
| Golden Shiner | *Notemigons crysoleucas* | | | | | 0.4 | 1.0 | | |
| Blackspot Shiner | *Notropis atrocaudalis* | 11.9 | 16.6 | 1.2 | 3.8 | | | | 2.0 |
| Sabine Shiner | *Notropis sabinae* | | 1.7 | 23.8 | 2.2 | | | | |
| Mimic Shiner | *Notropis volucelles* | | | | | | | 0.4 | 0.7 |
| Pugnose Minnow | *Opsopedus emiliae* | | | | | | 1.0 | | |
| Creek Chub | *Semotilus atromaculatus* | 3.0 | 3.2 | 1.6 | 1.9 | | | | |
| Creek Chubsucker | *Erimyzon oblongus* | 8.1 | 5.0 | 0.6 | 2.6 | 3.4 | 13.4 | | 0.8 |
| Spotted Sucker | *Minytrema melanops* | | | | | 0.7 | | 0.4 | |
| Blackt-tail Redhorse | *Moxostoma poecilurum* | | | | 0.2 | | | | 0.1 |
| Black Bullhead | *Ameiurus melas* | | | 0.1 | | | | | |
| Yellow Bullhead | *Ameiurus natalis* | 0.3 | | 0.1 | 0.2 | | 1.0 | | |
| Tadpole Madtom | *Noturus gyrinus* | | | | | 0.7 | 1.0 | 0.2 | |
| Brown Madtom | *Noturus phaeus* | 0.7 | 8.0 | 4.9 | 0.2 | | | | |

**Fish Identified in Recent Surveys on Peason Ridge (Continued)**

| Common Name | Scientific Name | Lyles | Little Sandy | Odom | Tiger | Comrade | Anacoco | Dowden | Martin |
|---|---|---|---|---|---|---|---|---|---|
| Grass Pickerel | *Esox americanus* | 0.8 | | | | 3.4 | 8.2 | | 1.3 |
| Pirate Perch | *Aphredoderus sayanus* | 4.1 | 0.9 | | 1.0 | 5.2 | 1.0 | 3.1 | 0.1 |
| Blackspotted Topminnow | *Fundulus olivaceus* | 19.7 | 28.5 | 7.2 | 13.2 | 24.7 | 15.5 | 2.9 | 5.4 |
| Western Mosquitofish | *Gambusia affinis* | 10.6 | | | | 0.7 | 10.3 | 0.2 | 1.3 |
| Brook Silversides | *Labidesthes sicculus* | | | | | | | 0.2 | |
| Banded Pygmy Sunfish | *Elassoma zonatum* | | | | | 2.2 | 3.1 | 1.7 | 0.2 |
| Green Sunfish | *Lepomis cyanellus* | 7.2 | 3.9 | 0.9 | 2.6 | | 1.0 | 0.2 | |
| Warmouth | *Chaenobryttus gulosus* | | | | | 1.9 | 1.0 | 0.2 | 0.1 |
| Bluegill | *Lepomis macrochirus* | | | | | | 7.2 | 1.3 | 1.0 |
| Dollar Sunfish | *Lepomis marginatus* | 1.0 | 1.7 | 1.0 | 2.4 | 6.0 | | 1.5 | 1.6 |
| Longear Sunfish | *Lepomis megalotus* | 0.6 | 0.9 | 0.2 | 2.4 | 1.5 | | 0.2 | 0.5 |
| Redspotted Sunfish | *Lepomis miniatus* | | 0.6 | 0.4 | 0.2 | 2.3 | 1.0 | 0.6 | 0.5 |
| Age 0 Lepomis | *Lepomis sp.* | 0.6 | 0.6 | 0.4 | 1.9 | 1.5 | 1.0 | 1.9 | 1.6 |
| Spotted Bass | *Micropterus punctulatus* | 0.1 | 0.4 | 0.1 | 0.2 | | | 0.4 | |
| Scaly Sand Darter | *Ammocrypta vivax* | | | 0.1 | | | | | |
| Mud Darter | *Etheostoma asperigene* | | | | | | 1.0 | | |
| Bluntnose Darter | *Etheostoma chlorosomum* | 6.4 | 0.6 | 0.2 | 0.7 | 4.9 | 10.3 | 2.3 | 2.0 |
| Slough Darter | *Etheostoma gracile* | | | | | 1.5 | 1.0 | 1.3 | 0.1 |
| Redfin Darter | *Etheostoma whipplei* | 1.7 | 6.3 | 4.4 | 0.5 | | | 0.6 | 0.1 |
| Dusky Darter | *Percina sciera* | 0.1 | | 0.4 | | | | | 0.2 |
| **Total fish captured** | | **859** | **463** | **801** | **418** | **267** | **97** | **480** | **1075** |

Data ware collected from July 2001 to August 2002. Primary investigators were James “Danny” Hudson, JRTC and Fort Polk; Dr. Tim Bonner, Southwest Texas State University; and Dr. Lance Williams, Ohio State University.

## Appendix C. Aquatic Invertebrates Identified in Recent Surveys on Peason Ridge

A "1" indicates a confirmed observation of the taxonomic family; "0" indicates no observation.

| Order | Family | Comrade | Dowden | Little Sandy | Lyles | Martin | Odom | Tiger | West Anacoco |
|---|---|---|---|---|---|---|---|---|---|
| Acariformes | (blank) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Amphipoda | | | | | | | | | |
| | Gammaridae | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Hyalellidae | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Anomopoda | | | | | | | | | |
| | Daphniidae | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Arachnida | | | | | | | | | |
| | Pisauridae | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
| Coleoptera | | | | | | | | | |
| | Dryopidae | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Dytiscidae | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Elmidae | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | Gyrinidae | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| | Haliplidae | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Hydrochidae | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
| | Hydrophilidae | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | Lampyridae | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | Psphenidae | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 |
| | Scirtidae | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| | (blank) | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Collembola | | | | | | | | | |
| | Sminthuridae | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | (blank) | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Decapoda | | | | | | | | | |
| | Palaemonidae | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | (blank) | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Diptera | | | | | | | | | |
| | Ceratopogonidae | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Chaoboridae | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 |
| | Chironomidae | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Culicidae | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| | Dixidae | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| | Empididae | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| | Simuliidae | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Tabanidae | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| | Tipulidae | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| | (blank) | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Ephemeroptera | | | | | | | | | |
| | Baetidae | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Baetiscidae | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Caenidae | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Ephemerellidae | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | Ephemeridae | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| | Heptageniidae | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | Isonychiidae | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| | Leptophlebiidae | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Tricorythidae | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| | (blank) | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 |
| Gastropoda | | | | | | | | | |
| | Ancylidae | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| | Physidae | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Planorbidae | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | (blank) | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hemiptera | | | | | | | | | |
| | Belostomatidae | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | Corixidae | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| | Gerridae | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Hebridae | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 |
| | Hydrometridae | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| | Mesoveliidae | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| | Nepidae | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| | Notonectidae | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| | Saldidae | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| | Veliidae | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | (blank) | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Hydroida | | | | | | | | | |
| | Hydridae | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Hymenoptera | (blank) | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Isopoda | | | | | | | | | |
| | Asellidae | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| Lepidoptera | | | | | | | | | |
| | Nepticulidae | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| | (blank) | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| Megaloptera | | | | | | | | | |
| | Corydalidae | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| | Sialidae | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| Mysidacea | | | | | | | | | |
| | Mysidae | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Nematoda | (blank) | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| Odonata | | | | | | | | | |
| | Aeshnidae | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |
| | Calopterygidae | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |
| | Coenagrionidae | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | Cordulegastridae | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |
| | Corduliidae | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Gomphidae | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Libellulidae | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| Oligochaeta | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Orthoptera | | | | | | | | | |
| | Gryllotalpidae | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Plecoptera | | | | | | | | | |
| | Capniidae | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| | Nemouridae | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
| | Perlidae | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Perlodidae | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| | Taeniopterygidae | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | (blank) | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Trichoptera | | | | | | | | | |
| | Hydropsychidae | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| | Hydroptilidae | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| | Leptoceridae | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 |
| | Limnephilidae | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| | Molannidae | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Philopotamidae | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| | Phryganeidae | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| | Polycentropodidae | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| | Psychomyiidae | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | (blank) | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |

# APPENDIX D

# AGENCY CONSULTATION LETTERS

**DEPARTMENT OF THE ARMY**
HEADQUARTERS, JOINT READINESS TRAINING CENTER AND FORT POLK
FORT POLK, LOUISIANA 71459

8 February 2002

REPLY TO
ATTENTION OF
Director of Public Works

Dave Fruge
Field Supervisor, US Fish and Wildlife Service
646 Cajundome Blvd.
Lafayette, LA 70506

Dear Mr. Fruge:

The U.S. Army, Joint Readiness Training Center (JRTC) and Fort Polk, is conducting analyses to determine the potential environmental and socioeconomic effects of a series of actions proposed to support ongoing and future missions. In accordance with the National Environmental Policy Act (NEPA) and Army regulations, the Army is seeking input from interested agencies, organizations, and individuals in determining the appropriate scope of two separate Environmental Assessments (EAs) that will address the effects of these proposed actions.

- **Initial Brigade Combat Team and Three Battalion JRTC Exercises**. The first EA will analyze the effects of three JRTC exercises planned to occur in 2003. Two of the proposed training exercises would involve a brigade task force composed of three light infantry battalions operating in the field. The third proposed exercise would involve a Brigade Combat Team (BCT) – a medium weight force utilizing a family of wheeled, armored vehicle known as Interim Armored Vehicles (IAVs). The exercises would occur on Army lands at Fort Polk military reservation and Peason Ridge Training Area, and on U.S. Forest Service lands used by the Army under Special Use Permit.

- **Digital Multi-purpose Battle Area Course**. The second EA will analyze the effects of constructing and operating a new gunnery range known as a Digital Multi-purpose Battle Area Course (DMPBAC), also scheduled to begin in 2003. The DMPBAC would be constructed at the Army's Peason Ridge Training Area and would provide a full-spectrum of live fire training opportunities, to include mounted (vehicle), dismounted, and aviation gunnery.

The JRTC, established at Fort Polk in 1993, is one of four Combat Training Centers in the world. It is the only Combat Training Center devoted to and capable of supporting Army light infantry brigade-level training. In addition, Fort Polk serves as an Army power projection platform from which forces deploy by air, rail, and sea to areas of operation around the world. It is home to the 2d Armored Cavalry Regiment (Light) and several other rapid deployment and combat service support units. Fort

Polk also provides training opportunities for the Louisiana National Guard and numerous reserve component units.

In October 1999, the Secretary of the Army and the Chief of Staff of the Army articulated a vision about people, readiness, and transformation of the Army to meet the demands of the 21st century. Transformation addresses the need for change based on emerging security challenges of the 21st century. Chief among these challenges is the need to be able to respond more rapidly to different types of operations requiring military action. The proposed JRTC exercises and DMPBAC will build upon and support ongoing training and readiness requirements for existing Active Army, Army Reserve, and National Guard units that train at JRTC and Fort Polk, as well as support training requirements for transformed Army units, in accordance with the Army's overall vision for transformation.

The Initial BCT/Three Battalion Exercise EA and the DMPBAC EA are being prepared in compliance with regulations issued by the Council on Environmental Quality (CEQ) (Title 40 of the Code of Federal Regulations, Parts 1500-1508) and Army Regulation 200-2 (Environmental Effects of Army Actions). Both documents are being prepared in appropriate sequence with other NEPA documents relating to aspects of Army transformation based on the logical timing of decisions and planning.

Each EA will consider a range of alternatives and address potential impacts and decisions specific to the proposed actions under consideration. The analysis process will identify affected resources, evaluate effects of the proposed actions on those resources, determine alternative implementation methods, and, if necessary, recommend mitigation measures. Some issues of concern that have been identified for analysis include land use and public access, ambient noise levels, wetlands and riparian areas, soil erosion, endangered species, cultural resources, sensitive plant and animal species, and water quality.

The Army encourages input on these proposed actions and the associated environmental analyses. To aid the Army in identifying and evaluating issues and concerns, comments should be as specific as possible. A comment form is enclosed for your convenience. Please submit comments to Public Affairs Office, Attn: Mr. Dan Nance, Radio Road, Fort Polk, LA 71459-5342 (337/531-7203) by March 11, 2002 so that your concerns may be addressed in the Draft EA(s).

Regards,

Ted Hammerschmidt
Deputy, Public Works

Enclosure

**DEPARTMENT OF THE ARMY**
HEADQUARTERS, JOINT READINESS TRAINING CENTER AND FORT POLK
FORT POLK, LOUISIANA 71459

8 February 2002

REPLY TO
ATTENTION OF
Director of Public Works

Laurel Wyckoff
State Historic Preservation Officer
Office of Cultural Development
Division of Archeology
P.O. Box 44247
Baton Rouge, LA 70804-4247

Dear Ms. Wyckoff:

The U.S. Army, Joint Readiness Training Center (JRTC) and Fort Polk, is conducting analyses to determine the potential environmental and socioeconomic effects of a series of actions proposed to support ongoing and future missions. In accordance with the National Environmental Policy Act (NEPA) and Army regulations, the Army is seeking input from interested agencies, organizations, and individuals in determining the appropriate scope of two separate Environmental Assessments (EAs) that will address the effects of these proposed actions.

- **Initial Brigade Combat Team and Three Battalion JRTC Exercises**. The first EA will analyze the effects of three JRTC exercises planned to occur in 2003. Two of the proposed training exercises would involve a brigade task force composed of three light infantry battalions operating in the field. The third proposed exercise would involve a Brigade Combat Team (BCT) – a medium weight force utilizing a family of wheeled, armored vehicle known as Interim Armored Vehicles (IAVs). The exercises would occur on Army lands at Fort Polk military reservation and Peason Ridge Training Area, and on U.S. Forest Service lands used by the Army under Special Use Permit.

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deploy by air, rail, and sea to areas of operation around the world. It is home to the 2d Armored Cavalry Regiment (Light) and several other rapid deployment and combat service support units. Fort Po lk also provides training opportunities for the Louisiana National Guard and numerous reserve component units.

In October 1999, the Secretary of the Army and the Chief of Staff of the Army articulated a vision about people, readiness, and transformation of the Army to meet the demands of the 21st century. Transformation addresses the need for change based on emerging security challenges of the 21st century. Chief among these challenges is the need to be able to respond more rapidly to different types of operations requiring military action. The proposed JRTC exercises and DMPBAC will build upon and support ongoing training and readiness requirements for existing Active Army, Army Reserve, and National Guard units that train at JRTC and Fort Polk, as well as support training requirements for transformed Army units, in accordance with the Army's overall vision for transformation.

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Each EA will consider a range of alternatives and address potential impacts and decisions specific to the proposed actions under consideration. The analysis process will identify affected resources, evaluate effects of the proposed actions on those resources, determine alternative implementation methods, and, if necessary, recommend mitigation measures. Some issues of concern that have been identified for analysis include land use and public access, ambient noise levels, wetlands and riparian areas, soil erosion, endangered species, cultural resources, sensitive plant and animal species, and water quality.

The Army encourages input on these proposed actions and the associated environmental analyses. To aid the Army in identifying and evaluating issues and concerns, comments should be as specific as possible. A comment form is enclosed for your convenience. Please submit comments to Public Affairs Office, Attn: Mr. Dan Nance, Radio Road, Fort Polk, LA 71459-5342 (337/531-7203) by March 11, 2002 so that your concerns may be addressed in the Draft EA(s).

Regards,

Ted Hammerschmidt
Deputy, Public Works

Enclosure

# APPENDIX E

# ATTACC MODEL METHODOLOGY

# APPENDIX E
# Army Training and Testing Area Carrying Capacity (ATTACC)
# Land Condition Module (LCM) Documentation

ATTACC is the standard ITAM methodology for estimating the carrying capacity of training land by relating training load, land condition, and land maintenance practices. Various decision-support tools have been developed and incorporated to simplify and automate the ATTACC methodology. The decision support tool used to estimate changes in land condition associated with mission activity is the Land Condition Module (LCM), an ArcView[1] geographic information system (GIS)-based software application.

Tetra Tech used a variation of the ATTACC LCM model algorithms in the soil erosion analysis for this EIS. The modified algorithms were provided by Alan Anderson[2], a principal investigator with the U.S. Army Corps of Engineers. The objective was to generate soil erosion rates on and installation-wide and landscape level, but the output of the ATTACC LCM Version 2.00 "black box" model currently only generates output for one training area at a time. ATTACC uses a number of input map (grid) layers that are derived from LCTA, ITAM GIS related installation data, and natural resource information. Two steps are required in the modified ATTACC model run: calculate change in land condition, and applying the Revised Universal Soil Loss Equation (RUSLE) to calculate predicted soil loss.

## Calculate Change in Land Condition

To calculate change in land condition, input layers that reflect change in military training load as a result of implementing the proposed action are applied to a vegetative cover index grid, or c-factor. These input latyers include maneuver impact miles (MIMs) distribution, restricted areas, installation and training area boundaries, vehicle impact, and vegetative recovery. To calculate the modified c-factor, simplified without units conversion, is as follows:

mC = c-factor + ( [MIMS distribution] / Impact) – Recovery

where:
mC = modified c-factor grid to be used in the next step.

The input data (grid) layers are described in detail in the layer descriptions below. Four different scenarios were generated:

- No training (zero MIMs)
- Current training levels
- Future training levels following implementation of the proposed action *without* BMPs and mitigation measures to counter the effects of soil erosion.

[1] ArcView is a product of Environmental Systems Research Institute (ESRI), Redlands, California, www.esri.com.

[2] Mr. Alan B. Anderson is a principal investigator at the U.S. Army Corps of Engineers (USACE) Engineer Research and Development Center, Construction and Engineering Research Laboratory (CERL), Champaign, Illinois. www.cecer.army.mil.

- Future training levels following implementation of the proposed action *with* BMPs and mitigation measures to counter the effects of soil erosion.

**Calculate Soil Loss**

Erosion was estimated for each scenario using the RUSLE, and in the ATTACC model each component of the equation is represented by an input grid layer. These layers include climatic, topographic, erodibility, vegetative cover, and support practice factors. The RUSLE is as follows:

$A = R * K * LS * mC * P$

where:
A = soil loss per unit area (tons $ac^{-1}yr^{-1}$).
R = rainfall and runoff factor ([hundreds of ft-tons]inch $ac^{-1}h^{-1}yr^{-1}$)
K = soil erodibility factor (tons hr [hundreds of ft-tons]$^{-1}in^{-1}$)
LS = slope length and steepness factor (dimensionless)
C = cover and management factor (dimensionless)
P = support practice (best management practice (BMP)) factor (dimensionless).

The output grid layer (A) contains an estimated soil loss rate in tons per acre per year for each pixel in the grid. Each pixel is 30 by 30 meters (m), or 900 $m^2$. The average soil loss for an area such as a watershed or training area is calculated by converting the pixel values from tons $ac^{-1}yr^{-1}$ to tons $pixel^{1}yr^{-1}$ and then summing the pixel values and dividing by the acres for each area.

To express soil loss in terms of the current land condition and its carrying capacity, Erosion Status (ES) is used. ES is the ratio of predicted erosion rates to tolerable erosion rates for a particular soil map unit. An ES value greater than 1 indicates more soil is being lost than can be replaced naturally. ATTACC uses ES as the measure of land condition for military installations, as soil erosion is a quantifiable variable that is easily understood by both military trainers and natural resource manages. An erosion status of 1 is a potentially useful carrying capacity thresholding for military lands.

The equation, which is used to calculate ES, is expressed as follows:

$ES = A/T$

where:
ES = Erosion Status (dimensionless)
A= soil loss per unit area (tons $ac^{-1}yr^{-1}$) (calculated previously)
T = soil loss tolerance factor (tons $ac^{-1}yr^{-1}$) (provided in soil surveys).

**Description of Input Data Layers**

The following is a list of input data (grid) layers that were used in the Fort Polk EIS ATTACC analysis. Unless otherwise noted, this data was provided by the Army's Eastern GIS regional Support Center (RSC) via Fort Polk. Pixel resolution of all output grids is 30 meters. 10-meter grids were used where available and converted to 30 meters.

1. **Installation Boundary**
   Fort Polk's installation boundary grid depicts Army-owned and USFS-owned land available for training under special use permits.

2. **Training Areas**
   Fort Polk's training area grid depicts the training area in which each pixel falls.

**3. Restricted Areas**

The restricted areas grid depicts areas unavailable for training, such as recreation areas and red-cockaded woodpecker clusters. The source layer was a GIS shapefile provided by MECA, Inc., a GIS contractor to Fort Polk.

**4. Distribution**

The training distribution grid reflects the allocation of MIMs across Fort Polk's training areas. Tetra Tech was provided a GIS shapefile of current training intensity layers and hard copy maps of anticipated future training intensities based on the proposed action. Training intensity categories are high, moderate, and low. A future training intensity shapefile was digitized from the mylars. The MIMs value for each training area, provided by Fort Polk, were distributed within each training area based on the training intensity variations, with a weight towards both high intensity areas and areas with less greenness or biomass, i.e. open areas. The greenness grid was provided by QES, Inc., a contractor to Fort Polk. The MIMs were allocated using weight values shown in the matrix in Table G-1.

**Table G-1**
**MIMs Distribution Matrix**

| | Greenness* | | | |
|---|---|---|---|---|
| **Training Intensity** | **Low (6-10) (50% allocation)** | **Moderate (11-12) (40% allocation)** | **High (13) (10% allocation)** | **Very High (14-17) (no allocation)** |
| High (60% allocation) | 30 | 24 | 6 | 0 |
| Moderate (25% allocation) | 12.5 | 10 | 2.5 | 0 |
| Low (15% allocation) | 7.5 | 6 | 1.5 | 0 |

*Higher greenness/biomass values indicate greater greenness/biomass.
Note: Values in matrix indicate relative distribution weights. For example, an area of low greenness and high training intensity (30) received 4 times as much MIMs as an area of low greenness and low training intensity.

The pixel values in the final grid represent the MIMs allocated for the area of that pixel. The sum of all the pixel values within one training area equals the total MIMs allocated for that training area.

**5. C Factor**

The c-factor grid represents the amount of biomass for each pixel, generated from LCTA data and land cover data. Values range from 0.01 to 0.45, where greater values indicate less biomass. The c-factor grid was provided by QES, Inc., a contractor to Fort Polk.

**6. Impact**

The impact grid reflects the change in the c-factor value from the single pass of an M1A2 tank. The pixel values were generated from LCTA data, soil information, and land cover data.

**7. Recovery**

The vegetation recovery map reflects the number of years necessary that a soil map unit requires to naturally recover the amount of plant cover that was removed by a single pass of an M1A2 tank. Detailed recovery data was not available for Fort Polk. Review of soil

information (USDA, 2002) indicated recovery rates range from 1 to 5 ½ yeras, so Tetra Tech generated a grid with an assumed average value of 3 years.

**8. K Factor**

Soil erodibility (K factor) values are available in published soil surveys. On-site K factor values were provided by RSC, and off-post pixel values were added by Tetra Tech using the soil survey and STATSGO (State Soil Geographic) GIS data (USDA, 2002).

**9. LS Factor**

Slope length and steepness values are derived from digital elevation data. On-site LS factor values were provided by RSC, and off-post pixel values were added by Tetra Tech using 10-meter DEMs provided by MECA, Inc., and 30-meter DEM data available from the *Atlas: Louisiana Statewide GIS* website (http://atlas.lsu.edu). Slopes were calculated from the DEMs, and corresponding slope lengths were assigned using a lookup table provided by George Teachman of the U.S. Army Environmental Center Environmental Compliance Division.

**10. R Factor**

Rainfall and runoff factor values are obtained from published isoerodent maps. One value of 450 ft-tons-inch/(ac-h-yr) was used for the Fort Polk region.

**11. P Factor**

The support practice factor grid reflects best management practices (BMPs) or mitigation measures that are currently or would be implemented. Measures in this analysis were assumed to be primarily vegetative buffers and sediment basins, but other measures can be used. Review of support practice factor values in literature reviews provided by CERL indicated average P-factor values of 0.25 for vegetative buffers and sediment basins, or these measures reduce soil erosion rates by 75 percent. The existing sediment basins and vegetative buffers on Fort Polk were incorporated when calculating current erosion rates. For future erosion rates, areas that experienced significant erosion were identified as areas where BMPs and mitigation measures would be applied. Significant erosion was defined using the following criteria:

- Areas with an ES of greater than 1 and an area greater than 25 contiguous acres in size were selected as potential areas that could be mitigated with a permanent sediment basin. Areas less than 25 contiguous acres were assumed to be too small for the use of a permanent sediment basin.

- Isolated problem areas that could be mitigated with smaller temporary sediment basins or other BMPs were also identified. The areas that exhibited an ES greater than 5 and were greater than 5 acres (and less than 25 acres) in size were selected.

- Satellite imagery classified to estimate the amount of biomass was used to determine where open areas in training areas used for vehicle maneuvers were located. Open areas greater than 1 acre in size and exhibiting an ES greater than 1 were selected.

The model was rerun using a new P-factor layer, reflecting the criteria above, to estimate soil loss from implementation of the proposed action if future additional future BMPs and mitigation measures were to be applied.

**11. T Factor**

Soil loss tolerance (T factor) values are available in published soil surveys. On-site T factor values were provided by RSC, and off-post pixel values were added by Tetra Tech using the soil survey and STATSGO data (USDA, 2002).

# APPENDIX F

# NOISE CONTOUR MAPS

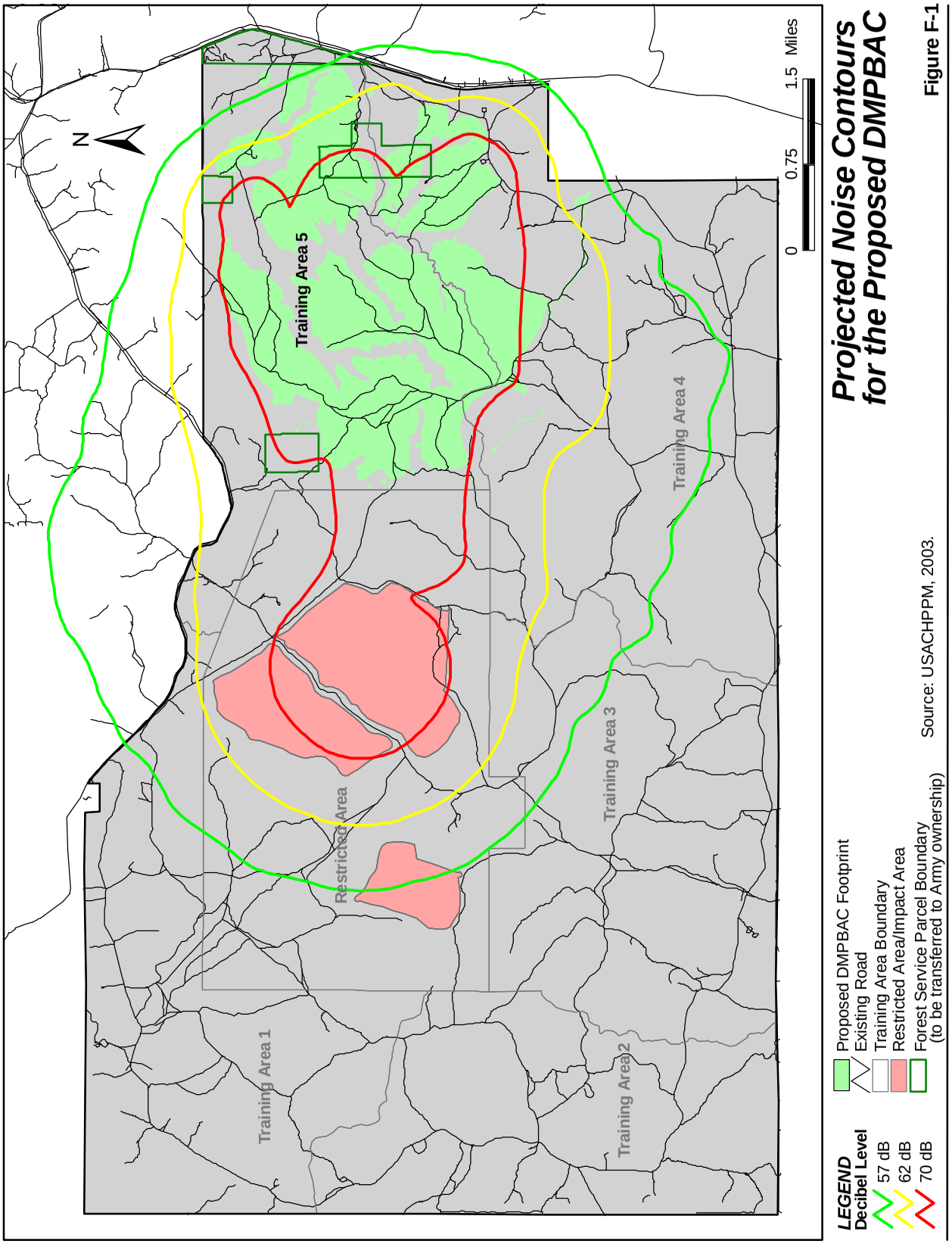
Projected Noise Contours
for the Proposed DMPBAC
N
0
0.75
1.5 Miles
Training Area 5
Training Area 4
Training Area 3
Training Area 2
Training Area 1
Restricted Area
LEGEND
Decibel Level
57 dB
62 dB
70 dB
Proposed DMPBAC Footprint
Existing Road
Training Area Boundary
Restricted Area/Impact Area
Forest Service Parcel Boundary
(to be transferred to Army ownership)
Source: USACHPPM, 2003.

Figure F-1

# APPENDIX G

# CRITERIA POLLUTANT AIR EMISSIONS

## DMPBAC Calculator for Construction Emissions

1/25/2003

**Estimated emissions for construction of facilities in DMPBAC (totalling approximately 30,000 square feet)**

| Construction Vehicle | Units | No. of Vehicles | Miles/day | Hr/day | Days | Total Hours or Miles | EF NOx | EF VOC | EF PM10 | CO EF | SOx EF | NOx (ton/yr) | VOC (ton/yr) | PM10 (ton/yr) | CO (ton/yr) | SOx (ton/yr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Light Duty Gasoline Vehicle | lb/mi | 25 | 40 | N/A | 250 | 250,000 | 0.007 | 0.021 | 0.0003 | 0.237 | 0.0004 | 0.875 | 2.625 | 0.0375 | 29.625 | 0.05 |
| Light Duty Gasoline Truck | lb/mi | 5 | 10 | N/A | 250 | 12,500 | 0.003 | 0.007 | 0.0002 | 0.068 | 0.0001 | 0.01875 | 0.04375 | 0.00125 | 0.425 | 0.000625 |
| Heavy Duty Gasoline Truck | lb/mi | 2 | 80 | N/A | 150 | 24,000 | 0.01 | 0.006 | 0.0003 | 0.066 | 0.0004 | 0.12 | 0.072 | 0.0036 | 0.792 | 0.0048 |
| Light Duty Diesel Truck | lb/mi | 2 | 70 | N/A | 100 | 14,000 | 0.004 | 0.002 | 0.001 | 0.008 | 0.001 | 0.028 | 0.014 | 0.007 | 0.056 | 0.007 |
| Heavy Duty Diesel Truck | lb/mi | 2 | 30 | N/A | 150 | 9,000 | 0.045 | 0.014 | 0.006 | 0.053 | 0.007 | 0.2025 | 0.063 | 0.027 | 0.2385 | 0.0315 |
| Track Tractor | lb/hr | 0 | N/A | 0 | 0 | 0 | 1.26 | 0.121 | 0.112 | 0.346 | 0.137 | 0 | 0 | 0 | 0 | 0 |
| Wheeled Tractor | lb/hr | 0 | N/A | 0 | 0 | 0 | 0.892 | 0.185 | 0.058 | 3.59 | 0.09 | 0 | 0 | 0 | 0 | 0 |
| Wheeled Loader | lb/hr | 2 | N/A | 8 | 60 | 960 | 1.89 | 0.25 | 0.172 | 1.79 | 0.182 | 0.9072 | 0.12 | 0.08256 | 0.8592 | 0.08736 |
| Concrete Truck | lb/hr | 7 | N/A | 8 | 100 | 5,600 | 2.166 | 0.192 | 0.256 | 0.046 | 0.004 | 1.0415 | 0.5376 | 0.12288 | 0.1288 | 0.0112 |
| Shipping Truck | lb/hr | 1 | N/A | 8 | 100 | 800 | 1.691 | 0.152 | 0.139 | 0.046 | 0.004 | 0.6764 | 0.0608 | 0.0556 | 0.0184 | 0.0016 |
| Dump/haul Truck | lb/hr | 4 | N/A | 8 | 100 | 300 | 1.69 | 0.192 | 0.256 | 1.79 | 0.454 | 0.2535 | 0.0288 | 0.0384 | 0.2685 | 0.0681 |
| Water Truck | lb/hr | 2 | N/A | 8 | 40 | 640 | 0.169 | 0.192 | 0.139 | 0.046 | 0.14 | 0.05408 | 0.06144 | 0.04448 | 0.01472 | 0.0448 |
| Gas Forklift | lb/hr | 1 | N/A | 8 | 100 | 800 | 0.412 | 0.56 | 0.021 | 12.6 | 0.017 | 0.1648 | 0.224 | 0.0084 | 5.04 | 0.0068 |
| Diesel Forklift | lb/hr | 1 | N/A | 8 | 40 | 320 | 1.691 | 0.152 | 0.139 | 0.434 | 0.044 | 0.27056 | 0.02432 | 0.02224 | 0.06944 | 0.00704 |
| Soil Roller/Compactor | lb/hr | 2 | N/A | 8 | 30 | 480 | 0.863 | 0.064 | 0.139 | 0.046 | 0.007 | 0.20712 | 0.01536 | 0.03336 | 0.01104 | 0.00168 |
| Motor Grader | lb/hr | 2 | N/A | 8 | 100 | 1,600 | 0.703 | 0.04 | 0.061 | 0.151 | 0.086 | 0.5624 | 0.032 | 0.0488 | 0.1208 | 0.0688 |
| Excavator | lb/hr | 4 | N/A | 8 | 100 | 3,200 | 1.691 | 0.152 | 0.139 | 0.675 | 0.143 | 0.54112 | 0.2432 | 0.2224 | 1.08 | 0.2288 |
| Bulldozer | lb/hr | 2 | N/A | 8 | 60 | 960 | 4.16 | 2.9 | 0.165 | 0.346 | 0.348 | 1.9968 | 1.392 | 0.0792 | 0.16608 | 0.16704 |
| Frontend Loader | lb/hr | 2 | N/A | 8 | 30 | 480 | 1.89 | 0.25 | 0.172 | 0.57 | 0.183 | 0.4536 | 0.06 | 0.04128 | 0.1368 | 0.04392 |
| Backhoe Loader | lb/hr | 2 | N/A | 8 | 30 | 480 | 1.89 | 0.25 | 0.112 | 0.57 | 0.183 | 0.4536 | 0.06 | 0.02688 | 0.1368 | 0.04392 |
| Crane | lb/hr | 2 | N/A | 8 | 100 | 1,600 | 1.691 | 0.152 | 0.139 | 0.674 | 0.007 | 1.3528 | 0.1216 | 0.1112 | 0.5392 | 0.0056 |
| Off Road Trucks | lb/hr | 1 | N/A | 8 | 30 | 240 | 4.166 | 0.192 | 0.256 | 1.79 | 0.454 | 0.49992 | 0.02304 | 0.03072 | 0.2148 | 0.05448 |
| Other Misc Equip (EPA) | lb/hr | | | | | | 1.69 | 0.149 | 0.138 | 0.675 | 0.002 | | | | | |
| Scrapper | lb/hr | | | | | | 3.83 | 0.275 | 0.405 | 1.251 | 0.462 | | | | | |
| **Subtotal Vehicle Emissions** | | **71** | | | | | | | | | | **10.67965** | **5.82191** | **1.04475** | **39.94108** | **0.935065** |

**Estimated Emissions for demolition of an old 40,000-square foot building**

| Construction Vehicle | Units | No. of Vehicles | Miles/day | Hr/day | Days | Total Hours or Miles | EF NOx | EF VOC | EF PM10 | CO EF | SOx EF | NOx (ton/yr) | VOC (ton/yr) | PM10 (ton/yr) | CO (ton/yr) | SOx (ton/yr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Light Duty Gasoline Vehicle | lb/mi | 15 | 70 | N/A | 40 | 42,000 | 0.007 | 0.021 | 0.0003 | 0.237 | 0.0004 | 0.147 | 0.441 | 0.0063 | 4.977 | 0.0084 |
| Light Duty Gasoline Truck | lb/mi | 5 | 10 | N/A | 40 | 2,000 | 0.003 | 0.007 | 0.0002 | 0.068 | 0.0001 | 0.003 | 0.007 | 0.0002 | 0.068 | 0.0001 |
| Heavy Duty Gasoline Truck | lb/mi | 2 | 80 | N/A | 40 | 6,400 | 0.01 | 0.006 | 0.0003 | 0.066 | 0.0004 | 0.032 | 0.0192 | 0.00096 | 0.2112 | 0.00128 |
| Light Duty Diesel Truck | lb/mi | 2 | 70 | N/A | 30 | 4,200 | 0.004 | 0.002 | 0.001 | 0.008 | 0.001 | 0.0084 | 0.0042 | 0.0021 | 0.0168 | 0.0021 |
| Heavy Duty Diesel Truck | lb/mi | 2 | 30 | N/A | 30 | 1,800 | 0.045 | 0.014 | 0.006 | 0.053 | 0.007 | 0.0405 | 0.0126 | 0.0054 | 0.0477 | 0.0063 |
| Shipping Truck | lb/hr | 2 | N/A | 8 | 30 | 480 | 1.691 | 0.152 | 0.139 | 1.79 | 0.004 | 0.40584 | 0.03648 | 0.03336 | 0.4296 | 0.00096 |
| Dump Truck | lb/hr | 4 | N/A | 8 | 30 | 300 | 1.691 | 0.192 | 0.256 | 1.79 | 0.454 | 0.25365 | 0.0288 | 0.0384 | 0.2685 | 0.0681 |
| Excavator | lb/hr | 4 | N/A | 8 | 20 | 640 | 1.691 | 0.152 | 0.139 | 0.675 | 0.143 | 0.54112 | 0.04864 | 0.04448 | 0.216 | 0.04576 |
| Wheeled Bulldozer | lb/hr | 2 | N/A | 8 | 30 | 480 | 4.16 | 2.9 | 0.165 | 0.346 | 0.348 | 0.9984 | 0.696 | 0.0396 | 0.08304 | 0.08352 |
| Crane | lb/hr | 2 | N/A | 8 | 30 | 480 | 1.691 | 0.152 | 0.139 | 0.046 | 0.007 | 0.40584 | 0.03648 | 0.03336 | 0.01104 | 0.00168 |
| Other Misc Equip (EPA) | lb/hr | | | | | | 1.69 | 0.149 | 0.138 | 0.675 | 0.002 | | | | | |
| **Subtotal Vehicle Emissions** | | **40** | | | | | | | | | | **2.83575** | **1.3304** | **0.20416** | **6.32888** | **0.2182** |

**Estimated Emissions for 22 miles of road construction**

| Construction Vehicle | Units | No. of Vehicles | Miles/day | Hr/day | Days | Total Hours or Miles | EF NOx | EF VOC | EF PM10 | CO EF | SOx EF | NOx (ton/yr) | VOC (ton/yr) | PM10 (ton/yr) | CO (ton/yr) | SOx (ton/yr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Light Duty Gasoline Vehicle | lb/mi | 4 | 40 | N/A | 100 | 16,000 | 0.007 | 0.021 | 0.0003 | 0.237 | 0.0004 | 0.056 | 0.168 | 0.0024 | 1.896 | 0.0032 |
| Light Duty Diesel Truck | lb/mi | 2 | 70 | N/A | 100 | 14,000 | 0.004 | 0.002 | 0.001 | 0.008 | 0.001 | 0.028 | 0.014 | 0.007 | 0.056 | 0.007 |
| Water Truck | lb/hr | 2 | N/A | 8 | 100 | 1,600 | 1.69 | 0.192 | 0.256 | 1.79 | 0.004 | 1.352 | 0.0576 | 0.2048 | 1.432 | 0.0032 |
| Dump/haul Truck | lb/hr | 3 | N/A | 8 | 100 | 300 | 1.69 | 0.192 | 0.256 | 1.79 | 0.454 | 0.2535 | 0.0288 | 0.0384 | 0.2685 | 0.0681 |
| Motor Grader | lb/hr | 2 | N/A | 8 | 100 | 1,600 | 0.703 | 0.04 | 0.061 | 0.151 | 0.086 | 0.5624 | 0.032 | 0.0488 | 0.1208 | 0.0688 |
| **Subtotal Vehicle Emissions** | | **13** | | | | | | | | | | **2.2519** | **0.3004** | **0.3014** | **3.7733** | **0.1503** |

**Estimated Emissions for Clearcutting/Thinning: Clearcut 914 acres, thin 2,285 acres**

| Construction Vehicle | Units | No. of Vehicles | Miles/day | Hr/day | Days | Total Hours or Miles | EF NOx | EF VOC | EF PM10 | CO EF | SOx EF | NOx (ton/yr) | VOC (ton/yr) | PM10 (ton/yr) | CO (ton/yr) | SOx (ton/yr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Light Duty Gasoline Vehicle | lb/mi | 5 | 40 | N/A | 242 | 48,400 | 0.007 | 0.021 | 0.0003 | 0.237 | 0.0004 | 0.1694 | 0.5082 | 0.00726 | 5.7354 | 0.00968 |
| Dump/haul Truck | lb/hr | 3 | N/A | 8 | 242 | 300 | 1.69 | 0.192 | 0.256 | 1.79 | 0.454 | 0.2535 | 0.0288 | 0.0384 | 0.2685 | 0.0681 |
| Crane | lb/hr | 2 | N/A | 8 | 242 | 3,872 | 1.691 | 0.152 | 0.139 | 0.674 | 0.007 | 3.273776 | 0.294272 | 0.269104 | 1.304864 | 0.013552 |
| Bulldozer | lb/hr | 2 | N/A | 8 | 242 | 3,872 | 4.16 | 2.9 | 0.165 | 0.346 | 0.348 | 8.05376 | 5.6144 | 0.31944 | 0.669856 | 0.673728 |
| Heavy Duty Diesel Truck | lb/mi | 2 | 30 | N/A | 242 | 14,520 | 0.045 | 0.014 | 0.006 | 0.053 | 0.007 | 0.3267 | 0.10164 | 0.04356 | 0.38478 | 0.05082 |
| **Subtotal Vehicle Emissions** | | **14** | | | | | | | | | | **12.077136** | **6.547312** | **0.677764** | **8.3634** | **0.81588** |
| **Total Vehicle Emissions** | | **138** | | | | | | | | | | **27.844436** | **14.000022** | **2.228074** | **58.40666** | **2.119445** |

Assumptions: (1) Equipment will operate 8 hours per day for the 12-month project; (2) Light Duty Gasoline Vehicles are used by construction workers traveling 40 miles per day to and from construction site.
References: AP-42; CARB, 2002

# APPENDIX H

# EIFS MODEL OUTPUTS

## Economic Impact Forecast System (EIFS) Model

### *Socioeconomic Impact Assessment*

Socioeconomic impacts are linked through cause-and-effect relationships. Military payrolls and local procurement contribute to the economic base for the region of influence (ROI). In this regard, construction of the DMPBAC at Peason Ridge will have a multiplier effect on the local and regional economy. With the proposed action, direct jobs will be created, generating new income and increasing personal spending. This spending generally creates secondary jobs, increases business volume, and increases revenues for schools and other social services.

### *The Economic Impact Forecast System*

The U.S. Army, with the assistance of many academic and professional economists and regional scientists, developed EIFS to address the economic impacts of NEPA-requiring actions and to measure their significance. As a result of its designed applicability, and in the interest of uniformity, EIFS should be used in NEPA assessments for RCI. The entire system is designed for the scrutiny of a populace affected by the actions being studied. The algorithms in EIFS are simple and easy to understand, but still have firm, defensible bases in regional economic theory.

EIFS is implemented as an on-line system supported by the U.S. Army Environmental Policy Institute (AEPI) through the Computer Information Science Department of Clark Atlanta University, Georgia. The system is available to anyone with an approved user-id and password. University staff and the staff of AEPI are available to assist with the use of EIFS.

The databases in EIFS are national in scope and cover the approximately 3,700 counties, parishes, and independent cities that are recognized as reporting units by federal agencies. EIFS allows the user to define an economic ROI by identifying the counties, parishes, or cities to be analyzed. Once the ROI is defined, the system aggregates the data, calculates multipliers and other variables used in the various models in EIFS, and prompts the user for forecast input data.

### *The EIFS Model*

The basis of the EIFS analytical capabilities is the calculation of multipliers that are used to estimate the impacts resulting from Army-related changes in local expenditures or employment. In calculating the multipliers, EIFS uses the economic base model approach, which relies on the ratio of total economic activity to basic economic activity. Basic, in this context, is defined as the production or employment engaged to supply goods and services outside the ROI or by federal activities (such as military installations and their employees). According to economic base theory, the ratio of total income to basic income is measurable (as the multiplier) and sufficiently stable so that future changes in economic activity can be forecast. This technique is especially appropriate for estimating aggregate impacts and makes the economic base model ideal for the EA process.

The multiplier is interpreted as the total impact on the economy of the region resulting from a unit change in its base sector; for example, a dollar increase in local expenditures due to an expansion of its military installation. EIFS estimates its multipliers using a location quotient approach based on the concentration of industries within the region relative to the industrial concentrations for the nation.

The user inputs into the model the data elements which describe the Army action: the change in expenditures, or dollar volume of the construction project(s); change in civilian or military employment; average annual income of affected civilian or military employees; the percent of civilians expected to

relocate due to the Army's action; and the percent of military living on-post. Once these are entered into the system, a projection of changes in the local economy is provided. These are projected changes in sales volume, income, employment, and population. These four indicator variables are used to measure and evaluate socioeconomic impacts.

Construction of the DMPBAC and supporting facilities would provide advanced unit training and optimal readiness for the Fort Polk home-stationed units. In the EIFS model, the current working estimate for the cost of construction of the DMPBAC and supporting facilities was entered as the change in expenditures. The construction is currently scheduled to take place in 2003.

***The Significance of Socioeconomic Impacts***

Once model projections are obtained, the Rational Threshold Value (RTV) profile allows the user to evaluate the significance of the impacts. This analytical tool reviews the historical trends for the defined region and develops measures of local historical fluctuations in sales volume, income, employment, and population. These evaluations identify the positive and negative changes within which a project can affect the local economy without creating a significant impact. The greatest historical changes define the boundaries that provide a basis for comparing an action's impact on the historical fluctuation in a particular area. Specifically, EIFS sets the boundaries by multiplying the maximum historical deviation of the following variables:

| | | Increase | Decrease |
|---|---|---|---|
| Sales Volume | X | 100% | 75% |
| Income | X | 100% | 67% |
| Employment | X | 100% | 67% |
| Population | X | 100% | 50% |

These boundaries determine the amount of change that will affect an area. The percentage allowances are arbitrary, but sensible. The maximum positive historical fluctuation is allowed with expansion because economic growth is beneficial. While cases of damaging economic growth have been cited, and although the zero-growth concept is being accepted by many local planning groups, military base reductions and closures generally are more injurious to local economics than are expansion.

The major strengths of the RTV are its specificity to the region under analysis and its basis on actual historical data for the region. The EIFS impact model, in combination with the RTV, has proven successful in addressing perceived socioeconomic impacts. The EIFS model and the RTV technique for measuring the intensity of impacts have been reviewed by economic experts and have been deemed theoretically sound.

The following are the EIFS inputs and output data for construction and the RTV values for the ROI. These data form the basis for the socioeconomic impact analysis presented in Section 4.0.

**EIFS REPORT: FORT POLK DMPBAC EA**

**PROJECT NAME**
Fort Polk DMPBAC EA II

**STUDY AREA**
22069 Natchitoches, LA
22085 Sabine, LA
22115 Vernon, LA

**FORECAST INPUT**

| | |
|---|---|
| Change In Local Expenditures | $30,902,000 |
| Change In Civilian Employment | 0 |
| Average Income of Affected Civilian | $0 |
| Percent Expected to Relocate | 0 |
| Change In Military Employment | 0 |
| Average Income of Affected Military | $0 |
| Percent of Militart Living On-post | 0 |

**FORECAST OUTPUT**

| | | |
|---|---|---|
| Employment Multiplier | 1.81 | |
| Income Multiplier | 1.81 | |
| Sales Volume – Direct | $13,829,070 | |
| Sales Volume – Induced | $11,201,550 | |
| Sales Volume – Total | $25,030,620 | 3.43% |
| Income – Direct | $1,577,733 | |
| Income - Induced) | $1,277,964 | |
| Income - Total(place of work) | $2,855,697 | 0.17% |
| Employment – Direct | 98 | |
| Employment – Induced | 80 | |
| Employment – Total | 178 | 0.36% |
| Local Population | 0 | |
| Local Off-base Population | 0 | 0% |

**RTV SUMMARY**

| | Sales Volume | Income | Employment | Population |
|---|---|---|---|---|
| Positive RTV | 6.24 | 6.09 | 8.77 | 6.95 |
| Negative RTV | -6.26 | -4.76 | -9.47 | -5.36 |

**RTV DETAILED**

**SALES VOLUME**

| Year | Value | Adj_Value | Change | Deviation | %Deviation |
|---|---|---|---|---|---|
| 1969 | 272563 | 806786 | 0 | 0 | 0 |
| 1970 | 279373 | 779451 | -27336 | -43243 | -5.55 |
| 1971 | 295380 | 791618 | 12168 | -3739 | -0.47 |
| 1972 | 318234 | 824226 | 32608 | 16701 | 2.03 |
| 1973 | 330679 | 803550 | -20676 | -36583 | -4.55 |
| 1974 | 366260 | 802109 | -1441 | -17348 | -2.16 |
| 1975 | 420156 | 844514 | 42404 | 26497 | 3.14 |
| 1976 | 413626 | 794162 | -50352 | -66259 | -8.34 |
| 1977 | 467011 | 831280 | 37118 | 21211 | 2.55 |
| 1978 | 544297 | 903533 | 72253 | 56346 | 6.24 |
| 1979 | 599890 | 893836 | -9697 | -25604 | -2.86 |
| 1980 | 679118 | 889645 | -4192 | -20099 | -2.26 |
| 1981 | 783177 | 931981 | 42336 | 26429 | 2.84 |
| 1982 | 861775 | 965188 | 33207 | 17300 | 1.79 |
| 1983 | 944246 | 1029228 | 64040 | 48133 | 4.68 |
| 1984 | 1017455 | 1068328 | 39100 | 23193 | 2.17 |
| 1985 | 1080000 | 1090800 | 22472 | 6565 | 0.6 |
| 1986 | 1109872 | 1143168 | 52368 | 36461 | 3.19 |
| 1987 | 1149214 | 1149214 | 6046 | -9861 | -0.86 |
| 1988 | 1165371 | 1118756 | -30458 | -46365 | -4.14 |
| 1989 | 1209909 | 1101017 | -17739 | -33646 | -3.06 |
| 1990 | 1325417 | 1153113 | 52096 | 36189 | 3.14 |
| 1991 | 1435226 | 1191238 | 38125 | 22218 | 1.87 |
| 1992 | 1518820 | 1230244 | 39007 | 23100 | 1.88 |
| 1993 | 1537757 | 1214828 | -15416 | -31323 | -2.58 |
| 1994 | 1584902 | 1220375 | 5546 | -10361 | -0.85 |

**INCOME**

| Year | Value | Adj_Value | Change | Deviation | %Deviation |
|---|---|---|---|---|---|
| 1969 | 283709 | 839779 | 0 | 0 | 0 |
| 1970 | 290297 | 809929 | -29850 | -46038 | -5.68 |
| 1971 | 307406 | 823848 | 13919 | -2269 | -0.28 |
| 1972 | 332148 | 860263 | 36415 | 20227 | 2.35 |
| 1973 | 348963 | 847980 | -12283 | -28471 | -3.36 |
| 1974 | 376639 | 824839 | -23141 | -39329 | -4.77 |
| 1975 | 433255 | 870843 | 46003 | 29815 | 3.42 |
| 1976 | 431333 | 828159 | -42683 | -58871 | -7.11 |
| 1977 | 483504 | 860637 | 32478 | 16290 | 1.89 |
| 1978 | 562469 | 933699 | 73061 | 56873 | 6.09 |
| 1979 | 623788 | 929444 | -4254 | -20442 | -2.2 |
| 1980 | 690460 | 904503 | -24942 | -41130 | -4.55 |
| 1981 | 800575 | 952684 | 48182 | 31994 | 3.36 |
| 1982 | 874202 | 979106 | 26422 | 10234 | 1.05 |
| 1983 | 958990 | 1045299 | 66193 | 50005 | 4.78 |
| 1984 | 1043625 | 1095806 | 50507 | 34319 | 3.13 |
| 1985 | 1095916 | 1106875 | 11069 | -5119 | -0.46 |
| 1986 | 1134018 | 1168039 | 61163 | 44975 | 3.85 |
| 1987 | 1175205 | 1175205 | 7166 | -9022 | -0.77 |
| 1988 | 1194466 | 1146687 | -28518 | -44706 | -3.9 |
| 1989 | 1239392 | 1127847 | -18841 | -35029 | -3.11 |
| 1990 | 1345450 | 1170542 | 42695 | 26507 | 2.26 |
| 1991 | 1457197 | 1209473 | 38932 | 22744 | 1.88 |
| 1992 | 1551778 | 1256940 | 47467 | 31279 | 2.49 |
| 1993 | 1583139 | 1250680 | -6260 | -22448 | -1.79 |
| 1994 | 1637239 | 1260674 | 9994 | -6194 | -0.49 |

**EMPLOYMENT**

| Year | Value | Change | Deviation | %Deviation |
|---|---|---|---|---|
| 1975 | 45013 | 2496 | 2602 | 5.78 |
| 1976 | 39344 | -5669 | -5563 | -14.14 |
| 1977 | 41586 | 2242 | 2348 | 5.65 |
| 1978 | 45467 | 3881 | 3987 | 8.77 |
| 1979 | 45003 | -464 | -358 | -0.79 |
| 1980 | 46114 | 1111 | 1217 | 2.64 |
| 1981 | 47637 | 1523 | 1629 | 3.42 |
| 1982 | 48132 | 495 | 601 | 1.25 |
| 1983 | 49921 | 1789 | 1895 | 3.8 |
| 1984 | 51601 | 1680 | 1786 | 3.46 |
| 1985 | 51728 | 127 | 233 | 0.45 |
| 1986 | 51192 | -536 | -430 | -0.84 |
| 1987 | 51254 | 62 | 168 | 0.33 |
| 1988 | 50287 | -967 | -861 | -1.71 |
| 1989 | 49409 | -878 | -772 | -1.56 |
| 1990 | 51116 | 1707 | 1813 | 3.55 |
| 1991 | 51785 | 669 | 775 | 1.5 |
| 1992 | 51907 | 122 | 228 | 0.44 |
| 1993 | 49864 | -2043 | -1937 | -3.88 |
| 1994 | 49625 | -239 | -133 | -0.27 |
| 1969 | 52392 | 0 | 0 | 0 |
| 1970 | 47206 | -5186 | -5080 | -10.76 |
| 1971 | 45109 | -2097 | -1991 | -4.41 |
| 1972 | 43271 | -1838 | -1732 | -4 |
| 1973 | 42012 | -1259 | -1153 | -2.74 |
| 1974 | 42517 | 505 | 611 | 1.44 |

**POPULATION**

| Year | Value | Change | Deviation | %Deviation |
|---|---|---|---|---|
| 1969 | 107005 | 0 | 0 | 0 |
| 1970 | 107898 | 893 | 500 | 0.46 |
| 1971 | 110907 | 3009 | 2616 | 2.36 |
| 1972 | 104542 | -6365 | -6758 | -6.46 |
| 1973 | 102060 | -2482 | -2875 | -2.82 |
| 1974 | 105909 | 3849 | 3456 | 3.26 |
| 1975 | 114242 | 8333 | 7940 | 6.95 |
| 1976 | 103534 | -10708 | -11101 | -10.72 |
| 1977 | 108063 | 4529 | 4136 | 3.83 |
| 1978 | 114449 | 6386 | 5993 | 5.24 |
| 1979 | 116128 | 1679 | 1286 | 1.11 |
| 1980 | 119448 | 3320 | 2927 | 2.45 |
| 1981 | 122554 | 3106 | 2713 | 2.21 |
| 1982 | 125239 | 2685 | 2292 | 1.83 |
| 1983 | 127310 | 2071 | 1678 | 1.32 |
| 1984 | 126936 | -374 | -767 | -0.6 |
| 1985 | 126869 | -67 | -460 | -0.36 |
| 1986 | 126810 | -59 | -452 | -0.36 |
| 1987 | 125815 | -995 | -1388 | -1.1 |
| 1988 | 124236 | -1579 | -1972 | -1.59 |
| 1989 | 122736 | -1500 | -1893 | -1.54 |
| 1990 | 121631 | -1105 | -1498 | -1.23 |
| 1991 | 123019 | 1388 | 995 | 0.81 |
| 1992 | 123570 | 551 | 158 | 0.13 |
| 1993 | 116260 | -7310 | -7703 | -6.63 |
| 1994 | 117223 | 963 | 570 | 0.49 |

****** End of Report ******

## *ACRONYMS AND ABBREVIATIONS*

| | |
|---|---|
| ACM | asbestos-containing material |
| ACR | Armored Cavalry Regiment |
| ADNL | A-weighted Day-Night Level |
| ADT | Average Daily Traffic |
| AGL | Above Ground Level |
| AQCR | Air Quality Control Region |
| AR | Army Regulation |
| AST | aboveground storage tanks |
| ATC | Air Traffic Control |
| ATTACC | Army Training and Testing Area Carrying Capacity |
| ATV | all-terrain vehicle |
| BJACH | Bayne Jones Army Community Hospital |
| BMP | Best Management Practice |
| CA | Comprehensive Agreement |
| CAA | Clean Air Act |
| C&D | construction and demolition |
| CDNL | C-weighted Day-Night Level |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR | Code of Federal Regulations |
| CO | carbon monoxide |
| dB | decibel |
| dbh | diameter breast height |
| dBP | linear decibel |
| DMPBAC | Digital Multi-Purpose Battle Area Course |
| DNL | Day-Night Average Sound Level |
| DoD | Department of Defense |
| DPW | Department of Public Works |
| DRMO | Defense Reutilization and Marketing Office |
| EA | Environmental Assessment |
| ED | endocrine disrupter |
| EIFS | Economic Impact Forecast System |
| EIS | Environmental Impact Statement |
| ENRMD | Environmental Management Division |
| EOD | Explosive Ordnance Detachment |
| ES | Erosion Status |
| FAA | Federal Aviation Administration |
| FICUN | Federal Interagency Committee on Urban Noise |
| FNSI | Finding of No Significant Impact |
| Fog oil | a de-aromitized diesel fuel |
| FPPA | Farmland Protection Policy Act |
| FY | fiscal year |
| HAP | Hazardous Air Pollutant |
| HDDT | heavy diesel duty trucks |
| HE | High Explosive |
| HPP | Historic Preservation Plan |
| HTA | Helicopter Training Area |
| HUC | Hydrologic Unit Code |
| HUD | Department of Housing and Urban Development |
| ICUZ | Installation Compatible Use Zone |
| IR | Infantry Regiment |
| IRP | Installation Restoration Program |
| ITAM | Integrated Training Area Management |
| IUA | Intensive Use Area |
| JRTC | Joint Readiness Training Center |
| KCF | Thousand Cubic Feet |
| KNF | Kisatchie National Forest |
| kV | kilovolts |
| LANG | Louisiana Army National Guard |
| LDEQ | Louisiana Department of Environmental Quality |
| LDWF | Louisiana Department of Wildlife and Fisheries |
| LEQ | Equivalent Sound Level |
| LOC | Location of Concern |
| LOS | Levels of Service |
| LTA | landtype association |
| LTAP | Louisiana Toxic Air Pollutant |
| LUA | Limited Use Area |
| LUPZ | Land Use Planning Zone |
| $m^3$ | cubic meter |
| MANPRINT | Manpower and Personnel Integration |
| MAP | Munitions Action Plan |
| MESO | Most Efficient Support Organization |
| mg | milligram |
| MGD | million gallons per day |
| MIM | maneuver impact mile |
| MOA | Military Operations Area |
| MOU | Memorandum of Understanding |
| MPRC | Multi-Purpose Range Complex |
| MRE | Meals-Ready-to-Eat |
| MVA | megavolt-amperes |
| MWH | megawatt-hour |
| Mya | million years ago |

| | |
|---|---|
| NAAQS | National Ambient Air Quality Standards |
| NAGPRA | Native American Graves Protection and Repatriation Act |
| NEPA | National Environmental Policy Act of 1969 |
| NFP | North Fort Polk |
| NFWWTP | North Fort Wastewater Treatment Plant |
| NHPA | National Historic Preservation Act |
| NIOSH | National Institute for Occupational Safety and Health |
| NOx | oxides of nitrogen |
| NOI | Notice of Intent |
| NPDES | National Pollutant Discharge Elimination System |
| NRCS | Natural Resources Conservation Service |
| NRHP | National Register of Historic Places |
| NRMB | Natural Resource Management Branch |
| $O_3$ | ozone (three atoms of oxygen) |
| OAQPS | Office of Air Quality Planning and Standards |
| OB/OD | open burning/open detonation |
| ODC | ozone depleting compounds |
| PA | Programmatic Agreement |
| PAH | polyaromatic hydrocarbons |
| Pb | lead |
| PCPI | per capita personal income |
| PGC | Public Gas Company |
| PM | particulate matter |
| POL | petroleum, oils, and lubricants |
| ppb | part per billion |
| ppm | parts per million |
| PSD | Prevention of Significant Deterioration |
| psi | pounds per square inch |
| RCI | Residential Communities Initiative |
| RCRA | Resource Conservation and Recovery Act |
| RCW | red-cockaded woodpecker |
| ROI | region of influence |
| RTV | rational threshold value |
| RV | recreational vehicle |
| SFP | South Fort Polk |
| SFWWTP | South Fort Wastewater Treatment Plant |
| SHPO | State Historic Preservation Officer |
| SIP | State Implementation Plan |
| SLUA | Special Limited Use Area |
| SOP | Standard Operating Procedure |
| SOx | oxides of sulfur |
| STORET | STOrage and RETrieval |
| SUA | Special Use Airspace |
| SUPA | Special Use Permit Agreement |
| SWMU | Storm Water Management Unit |
| SWPPP | Storm Water Pollution Prevention Plan |
| TAP | toxic air pollutant |
| TOG | toxic organic gases |
| TPY | tons per year |
| µg | microgram |
| µg/ $m^3$ | microgram per cubic meter\ |
| USACHPPM | United States Army Center for Health Protection and Preventive Medicine |
| USEPA | United States Environmental Protection Agency |
| USLE | Universal Soil Loss Equation |
| UST | underground storage tanks |
| UXO | Unexploded Ordnance |
| VERA | Voluntary Early Retirement Authority |
| VFR | Visual Flight Rules |
| VOC | volatile organic compounds |
| VSIP | Voluntary Separation Incentive Pay |
| WMA | Wildlife Management Area |